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Inside Dope

By GEORGE F. TAUBENECK



Learn to live and laugh — thus delay your epitaph

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Stories of the Week

In a medical reception room a chronic complainer was blasting away at the nurse. Overhearing overtones of this rhubarb, Dr. White intercommed his nurse: "What's that old coot screaming about this time?"

"He complains," she reported, "that he got well before the medicine was gone. He has some left and wants a refund."

In Chicago a brown-eyed Texan who visited our Exhibition booth relayed information that three towns named Edna, Comfort, and Louise aren't far apart along a Texas pike.

Signs along this highway advertise a motel:

"Sleep in Comfort between Edna and Louise."

The Living End

Beauty queens aren't unusual; but Miss Nancy White of Hillsdale, Calif. has an intriguing title. She was chosen "Miss Bay Area," Hi Jarvis and Dick Dawson inform us.

A queen to end all queens!

Sore Exhibitors—and Why

Feet and leg muscles weren't the only things sore at the All-Industry Exposition in Chicago. Take, like, Exhibitors. Almost unanimously they felt short-changed.

People they wanted to see, who were in Chicago at the time, didn't come to see them. Reason: Prime clients were downtown, in loop hotels, attending association meetings. In some cases these meetings ran overtime—too late for attendants to battle traffic out to the amphitheatre (a three-dollar cab ride during rush hours).

Other association conclaves did end at the appointed hour of 4 p.m. But the boys were tired and thirsty, decided to have one for the road and, gee . . . where did the time go?

Tuesday, particularly, was an empty-aisle day. Exhibitor personnel enjoyed reunions with Ol' Buddies from other booths while awaiting absent customers. But the Big Brass (most of whom arrived that day) muttered darkly that fraterniza-

(Continued on Page 6, Col. 1)

Associations Step Up Activities To Iron Out Industry's Problems

ARW Gets Down to 'Brass Tacks' In Business Talks NWAHACA OKs Sales Drive for '58 RACCA To Push Activity With Joint UA Committee

CHICAGO — In hard-hitting sessions that played to standing-room-only crowds and which got down to brass tacks on the problems confronting their business, the Air-Conditioning and Refrigeration Wholesalers Association marked its 22nd annual meeting here one of the most successful in its history.

One apparent reason for the high interest shown in the meetings was that prominent members of the association presented most of the formal discussion at the "Look What Can Happen To Your Business" session, with a great many members participating in a question-and-answer period following.

Subjects covered in this session included the advantages and disadvantages of handling lines on an exclusive or semi-exclusive basis; whether credit terms should be eased or tightened and the problem of the use of easy credit for competitive purposes; ways of reducing "unnecessary" expenses such as defective shipments, in-warranty handling charges, and freight charges; and the matter of how "realistic" the list pricing of items sold by the supplies wholesaler should be.

New president of ARW is W. J. Hieber, Refrigerative Supply, Inc., Portland, Ore. Vice president is Charles G. Koopman, Supply Distributors Corp., Boston; W. C. Miessemer, Arizona Refrigeration Supplies, Inc., (Concluded on Page 20, Col. 1)

Show Attendance Breaks '55 Record

CHICAGO — Registered attendance at the 10th Air Conditioning and Refrigeration Exposition here was 14,752, those in charge of the Exposition report. Visitors came from every state in the union, Canada, and about 25 foreign countries.

The Show, which featured exhibits of 262 companies, exceeded the previous record-breaking

Picture coverage of the Show begins in this issue, starting on page 14.

show in Atlantic City in 1955 by some 13%. The Exposition is sponsored by the Air-Conditioning & Refrigeration Institute.

The 11th Exposition of the Industry is scheduled to be held in Atlantic City. In the normal cycle it would have been held in the Fall of 1959, but it is understood that plans now call for it to be held early in February, 1960.

A greater variety of air conditioning, commercial and industrial refrigeration, and parts and accessories were displayed than ever before, the Show committee claimed.

CHICAGO — Overwhelming approval (231 to 5) was voted by listeners after hearing outlines of a national campaign to promote the sale of warm air heating systems presented as the climax of the 44th annual convention of the National Warm Air Heating & Air Conditioning Association held at the Morrison hotel here Nov. 21 and 22.

"Operation Dollars," as the proposed program was tagged when prepared by the association's staff, would enlist active participation and financial support from manufacturers, wholesalers, and dealers in a carefully mapped out campaign seeking a 30% increase in warm air furnace sales next year.

Whether the association will adopt the program, however, will depend on action by the board of trustees, which is ex-

(Concluded on Page 7, Col. 2)

NHAW Sees Gradual Integration of Wholesaler Groups

CHICAGO — Efforts of National Heating & Airconditioning Wholesalers, Inc., to line up refrigeration items for its members seem to be bearing fruit, it was indicated at the group's 11th annual convention held Nov. 18 to 20 at the Morrison hotel here.

Already a number of heating wholesalers are handling refrigererants and other components, W. R. "Wib" Bull, executive director, revealed.

Talks with manufacturers on this problem will continue, said Bull, who added that he sees in the future a "gradual integration between warm air and refrigeration wholesalers."

In a move aimed chiefly at furnace manufacturers, the group also adopted a resolution

(Concluded on Page 2, Col. 1)

CHICAGO — Reports of a rapidly accelerating growth of the association, a stand against the Congressional anti-bid shopping bill in its present form, and a promise of more activity in the field of joint committee activity with the United Association marked the annual convention of Refrigeration & Air Conditioning Contractors Association (RACCA) national.

Five local RACCA groups in the Far West have affiliated with the national association since August, said Ray Kromer, RACCA executive vice president, who also reported some 100 new membership applications at the annual meeting.

The contractors' group went on record against the "anti bid-shopping bill" H.R. 7168, dealing with Federal construction contracting practices, after hearing the proposed measure denounced by Wilbur S. Hokom, president of the National Association of Plumbing Contractors, and Peter T. Schoemann, president of the United Association.

However, RACCA said that it would support an anti bid-shopping bill that was presented in a form acceptable to contractors.

Some "sensational developments" in the area of joint com-

(Concluded on Page 4, Col. 4)

NCRSA's Future?

Sees 'Favorable' General Outlook

CHICAGO—An impression of a generally favorable future for the commercial refrigerator distributor was conveyed by speakers at the 11th annual convention of the National Commercial Refrigerator Sales Association here.

K. O. Nygaard, director of research for the B. F. Goodrich Co., looked into his crystal ball and told the distributors, "the available factual information

(Concluded on Page 4, Col. 1)

Hildebidle To Head Mathes Officer Slate

Reveal Mathes Family Withdraws from Firm

WILKES-BARRE, Pa. — Announcing appointments of new operating officials for its Fort Worth, Texas subsidiary, The Mathes Co., Glen Alden Corp. also disclosed that members of the Mathes family will no longer be active in the business.

Mathes is a manufacturer of air conditioners and heat pumps. Curtis Mathes, Sr. has been president and C. R. Mathes and Curtis Mathes, Jr. vice presidents. It is understood that Mathes family members have been negotiating to purchase controlling interest in Olive-Myers-Spalti Mfg. Co., Athens, Texas furniture firm.

New Mathes executives include John J. Hildebidle, executive vice president; George H. Childers, vice president in charge of sales; and Edward H. Schwartz, vice president for engineering and manufacturing.

Hildebidle was formerly vice president of International Heater Co., Utica, N. Y. Childers has been merchandise sales manager for Emerson Electric Mfg. Co., St. Louis. Schwartz comes to Mathes from Addison (Mich.) Products Co.

In another recent development, the Glen Alden board was increased from six to nine members. The three new members elected to the board are all officers and directors of List Industries Corp. They are Albert A. List, president and chairman of List; Dudley G. Layman, List's financial vice president; and Maj. Gen. Royal B. Lord, chairman of the executive committee.

As previously reported in the NEWS, List Industries recently acquired about 675,000 shares, or about 38%, of Glen Alden's outstanding stock, following an offer for tenders at \$12.50 a share.

Formerly known as RKO Theatres Corp., List has interests in textiles, electronics, real estate, and other businesses.

Fedders '57 Report—Peak Sales, Earnings

MASPETH, N. Y.—Highest in its history sales and earnings were reported by Fedders-Quigan Corp. for the fiscal year ended Aug. 31. Profits and sales were at all-time highs for the second successive year.

Salvatore Giordano, president, stated net income was \$3,617,271, equal to \$1.94 a common share on 1,828,659 outstanding shares. That compared with \$3,277,188, or \$1.76 a share, for the preceding fiscal year. Earnings before taxes amounted to \$7,607,271 as against \$6,857,434 the previous period.

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## NHAW Sees Wholesaler Integration--

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recommending that such manufacturers either sell only through wholesalers or sell to dealers at a price that "recognizes the wholesaler function."

### 'To Get Policies'

The association intends to question every manufacturer in the industry to get their policies on record in the association's office, Bull explained. This approach to the problem has been cleared with the Federal Trade Commission, he said.

"It is not wrong for a manufacturer to establish direct-to-dealer distribution, if he chooses to make his distribution pattern in that manner," declared John Robertson, newly elected NWAH president.

"However, it is wrong for a manufacturer to establish a varied type of distribution, ac-

ording to geography, and apply that which is most expedient for a given territory at the moment. This problem must be worked out by the wholesalers and the manufacturers together," Robertson said.

### 'Not Without Sin'

"The wholesalers are not without sin in some of their new adaptations by using the manufacturers' warehouse stocks, losing some of their function as an ample stocking distributor," admitted Robertson. "The wholesaler's worst sin is making direct shipments from the manufacturer to a dealer and essentially becoming a broker at a very small commission for the sale.

"The wholesaler's prime function is buying a variety of products, in carloads of each item, and making smaller shipments

of assorted items," Robertson emphasized. "The broker-type commission selling can push us right out of the business, as then we are not wholesaling," warned the new president.

Other new officers of the association include Oscar P. Brauer, president elect; Harold W. Squire, vice president; J. Orville Garrett, secretary; and R. B. Hesling, treasurer.

### 'Workshop Panels'

Three "workshop panels" were held during the group's three-day convention on the subjects "Maintaining a Profitable Operation During a Declining Building Market," "Credits, Collections, and Financing Expanding Costs and Inventory," and "Wholesaler Budgets for Sales Promotion."

One entire afternoon was devoted to individual conferences between wholesalers and manufacturers in booths provided for the latter.

## Wolverine Separates New Products, Operations, Names Frink, Walter

DETROIT—Calumet & Hecla, Inc.'s Wolverine Tube Div. has established a separate New Products Div. and an Operations Div. to facilitate expansion of product development activities as



R. M. Frink

well as accelerate improvement of existing products, it was announced by D. W. Blend, vice president and general manager of Wolverine Tube.



E. C. Walter

R. M. Frink has been named to the newly-created post of director, new products division, and E. C. Walter was named director of operations. Previously, research and development was the responsibility of the former Operations Control Div., directed by Frink.

Frink has been with Wolverine Tube since 1939, except for five years military service. He has worked in every phase of plant activities starting with production jobs in the mill through plant manager, customer relations, and director of operations.

Before joining Wolverine Tube in 1954, Walter was vice president and general manager of Viking Copper Tube Co. for five years. Prior to that, he was with Chase Brass & Copper Co., Inc., for 11 years in various engineering capacities.

## Sheldon Coleman Is Coleman Chairman

WICHITA, Kan. — Sheldon Coleman, Coleman Co., Inc., has been elected chairman of the board of directors, it was announced recently.

He succeeds his father, the late W. C. Coleman, founder of the company and chairman of the board for nearly 60 years. Mr. Coleman died Nov. 2. He was 87 years old.

Harold Fryar, Coleman director of manufacturing, was elected to the board to fill the unexpired term of the late Mr. Coleman.

In his quarterly report to the directors, Sheldon Coleman said both sales and earnings for the month of October were ahead of the same period last year, but that the recent upturn was not enough to offset heavy operating losses incurred during the first six months.

A strike last May closed the Wichita factories of the company for 53 days.

## NARDA Management Institute Set In Washington July 21

CHICAGO — National Appliance & Radio-TV Dealers Association will hold its Institute of Management at American university, Washington, D. C. next July 21-26, according to H. B. Price, Jr., chairman of the institute committee.

Nathan A. Baily, dean of business administration, and Dr. Harold B. Wess, director of program, and Prof. William A. Davidson of Ohio State university will again be included on the faculty, it was added.

## American Blower Has New Texas Branch

DETROIT — A new branch office has been opened in Amarillo, Texas by American Blower Div. of American-Standard according to E. W. Petersen, vice president-marketing.

Named manager of the new sales facility is F. L. Matthews. A mechanical engineering graduate of Oklahoma A&M, Matthews was formerly a member of the Tulsa office sales engineering staff.

When buying a low temperature system compare the total cost of all equipment including the coils, compressor and controls and you will find that...

### THERMOBANK SAVES DOLLARS ON COMPRESSOR COST

It uses a smaller horsepower compressor than all other systems for the same capacity; because only THERMOBANK can use a low temperature compressor without overloading the compressor motor.

### THERMOBANK PRICE INCLUDES ALL PARTS

It is complete; no extras to buy. Competitive systems require extras such as electric heaters, hand valves, electric lines, controls, insulation, etc.

### ONLY THERMOBANK ELIMINATES LIQUID DAMAGE

It provides an abundance of heat for positive liquid re-evaporation during defrost. Systems that depend on heat of compression as source of heat will circulate liquid. Liquid slugging results in progressive compressor damage and expensive repairs.

### ONLY THERMOBANK PREVENTS LUBRICATION FAILURES

With THERMOBANK oil stays in the crankcase. All other systems have a sharp reduction in suction pressure after defrosting, causing oil foaming and oil pumping, exposing the compressor to lubrication failures.

### THERMOBANK COSTS LESS TO OPERATE

It uses less electricity and operates fewer hours. Only THERMOBANK automatically regulates defrosting based on frost buildup and eliminates unnecessary defrosting cycles. It defrosts at any outdoor temperature and is very fast (all other systems require three to four times longer to defrost).

### ACTUAL USE PROVES THERMOBANK IS TROUBLE-FREE

THERMOBANK is the oldest and the only time-proven system that can assure an owner trouble-free operation without continual threat of system failure and loss of expensive frozen food.

WRITE FOR AVAILABLE LITERATURE

## KRAMER TRENTON COMPANY Trenton 5, New Jersey

44 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

**WHY**  
**KRAMER**  
**THERMOBANK**  
**MAKES**  
**CENTS**  
...it costs  
less to buy  
and less  
to operate





## WHY MOST OXYGEN TENTS ARE EQUIPPED WITH BENDIX-WESTINGHOUSE COMPRESSORS

Because human lives hang in the balance, only the *best* in compressors will do for oxygen tents.

That most oxygen tents are equipped with Bendix-Westernhouse compressors is due to two prime facts: First, these compressors are *whisper-quiet* in operation, so that they do not disturb critical patients. Second, Bendix-Westernhouse compressors give *solidly dependable performance* day after day after day, assuring constant air-conditioned com-

fort for the patient.

Even though priced competitively, Bendix-Westernhouse is *not* "just another compressor". Witness the demonstrated preference of these oxygen tent manufacturers to whom quietness and dependability are all-important. *They feel that Bendix-Westernhouse compressors combine quietness and dependability to a greater degree than any other compressors on the market.*

Most likely you don't make oxygen tents. But we're sure you want the unusual quietness and dependable performance of Bendix-Westernhouse compressors.

There's one easy way to prove these qualities to your own satisfaction. Give us a trial order—and let the results speak for themselves. We can make you a very attractive proposition on both price and delivery.

# **Bendix-Westernhouse**

EVANSVILLE, IND.

A Division of Bendix-Westernhouse Automotive Air Brake Company, Elyria, Ohio—Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.

For more information about products advertised on this page use Information Center, page 12.



## Sees 'Favorable' NCRSA Outlook --

(Concluded from Page 1, Col. 4) concerning the business situation does not support the conclusion that a slump in business activity is now under way, or that a slump will occur in 1958.

"A careful review of the likely trends in demand by the 'big spenders' in our economy—consumers, governments, and business firms—still points to a gradual rise in over-all business activity through mid-1958."

### 'TIGHT MONEY MARKET WILL AID WHOLESALER'

Milton Schwartz, New York City distributor, asserted that while the so-called current "tight money market" may reduce some sales, it will, in the long run tend to operate for the benefit of the distributor, rather than to his detriment.

"Some people not entitled to credit in the first place, won't get it," he further stated.

Both Nygaard and Austin Rising, vice president in charge of marketing for York Div. of Borg-Warner Corp. asserted that their companies favor the "self-made" independent distributor over the factory branch as a sales outlet for certain products.

### INDEPENDENT WILL 'GROW, PROSPER'

Rising said York believes that the independent distributor will grow and prosper "because his roots reach into the bedrock of community and business."

"He not only knows the products he represents and how they can best be applied, but he also knows his market."

Marie Lawton, executive secretary of the association, reported that members of the association have shown substantial growth in their business stature during the past eight years.

Member sales increased 154%

from 1949 to 1956 and their inventory turnover increased 126%. Average net worth of a distributor in 1949 was \$70,287 while in 1956 it was \$143,872. Total operating cost dropped from 19.76% to 17.69%. Average current assets in 1949 were \$103,323, while in 1956 they were \$285,391.

### 219 MEMBERS

Harry Hattenbach of Cleveland, newly-elected president of the association, reported that NCRSA now has 219 members and 22 associate members.

Harry Corbin, vice president in charge of sales for C. V. Hill & Co., Inc., reported on progress made by a joint distributor-manufacturer relations committee to iron out mutual problems.

Other newly-elected officers of the association are Milton I. Schwartz, New York City, first vice president; Ray Winther, San Francisco, second vice president; Dudley M. Cawthon, Miami, Fla., third vice president; and Donald Denny, Dayton, treasurer.

Newly-elected directors are Robert Trudeau, Montreal, Que., Can.; Phil Schnell, Portland, Ore.; and Max Udell, Grand Rapids, Mich.

The 1958 convention, it was announced, will be held in Miami, Fla., in November.

### 'DON'T UNDERESTIMATE YOUR COMPETITOR'

Other speakers on the program highlighted the importance of promoting the value of distributors' services. Sam W. Davis, Jr., retiring president, set the theme by warning distributors and manufacturers:

"Don't make the error of underestimating the ingenuity of your competitor in building quality into his product."

"By relaxing your efforts for just a little while, you may be confronted with a 'Sputnik' or even a series of 'Sputniks.'"

"Sacrificing quality by use of cheap or inferior goods in order to save money is like stopping the clock to save time."

George A. Lucas, president of Allied Store Engineering Corp. of E. Hartford, Conn., declared the commercial refrigerator distributor was a professional person, like the doctor or lawyer, whose main job is to inspire confidence in his customer.

"Let's start acting like professional people and give service."

## RACCA To Push Joint UA Activity --

(Concluded from Page 1, Col. 4)

mittee activity at the local level between RACCA and the United Association was hinted at during the course of the convention. The joint committee activity between the RACCA locals and the union embraces apprentice training and other types of activities that can be of benefit to all of those working in the field.

### WALLING NAMED

RACCA president for the coming year is C. L. Walling, National Refrigeration Sales Co., Los Angeles. First vice president is Armand Cowan, Stuart Cooling Corp., Miami, Fla., and second vice president is Lee Quinn, Lee Quinn Co., Cincinnati.

Harvey Hottel, Harvey Hottel, Inc., Silver Springs, Md., was elected treasurer; Joseph Marchese, Marchese Refrigeration, Pittsburgh, is recording secretary; and Ron Garlock, Garlock Insulation Co., Lansing, Mich., is sergeant-at-arms.

New directors elected are T. C. Alexander, T. C. Alexander Co., Denver; J. A. Piene, Indiana Weathermakers, Indianapolis; and Walter McCarty, McCarty Bros. Co., River Forest, Ill.

In its "Money Making" and "Welfare and Progress" forums the RACCA members attending the convention covered a wide range of subjects, from compensation plans, to the value and importance of service and maintenance contracts, to procedures for setting up joint committee activities with the UA.

### 'HUGE CONDITIONING SERVICE RESPONSIBILITY'

In a comprehensive discussion of the opportunities afforded in service work and in service maintenance contracts, Walter McCarty reminded the contractors that the tremendous increases in air conditioning sales in the past few years are piling up a huge service responsibility for those who are willing to handle service work.

What is possibly more important to the individual contractor, said McCarty, is the fact that studies being made on the subject show that there is a high percentage of profit on service work, particularly in the larger installations. In some instances, this may amount to as much as

50% gross profit on work.

Service maintenance contracts, properly handled, are not only a major source of income for the contractor, but they offer other advantages, such as leveling out the work load, and enabling the contractor to hold good men the year around. They are relatively easy to sell, McCarty stating that on new installations made by his firm, more than 50% sign a service maintenance contract sent out with a simple letter of explanation following the sale.

Not too long ago in New Jersey, the labor situation for the refrigeration and air conditioning contractor was chaotic, said Charles Edmond, Engineering & Refrigeration, Inc., Jersey City, N. J., in discussing the joint committee activity. A single contractor might find as many as 27 local unions in a single territory; he was forced to sign up with a variety of unions, and rates varied all over the lot. This resulted in continuing squabbles, and mistrust.

### GIVEN 'FREEDOM OF MOVEMENT'

When the United Association amended its constitution to provide for the establishment of a refrigeration fitters' section in the union, and Joseph Monahan was named to head up this section, it became possible for the New Jersey RACCA group to sit down and work out a statewide contract which primarily gave a contractor "freedom of movement" for his operations with certain tonnage limitations.

The statewide contract also worked towards uniform pay scales, and got a building trades book for the contractor's men. It also provided for the establishment of a joint industry trust fund to cement the provisions of the contract, and to provide for other beneficial joint activities.

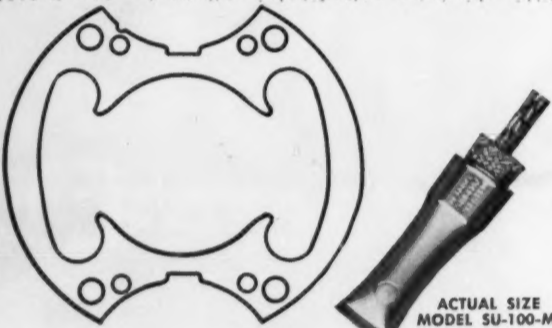
## Fedders '57 Report--

(Concluded from Page 1, Col. 5)

Net sales rose 8.7% to \$70,650,155 from the \$65,006,728 for 1956. A 30% jump on Fedders brand air conditioner volume, which more than offset a substantial decline in shipments to contract customers, was a primary factor in the record.

## MIGHTY MITE PROTECTS MOTORS AGAINST FAILURE REGARDLESS OF Lamination Shape

Mighty Mite motor protectors can be furnished as small as 3/4" long x 1/16" wide for motors rated up to 1/3 h.p., 115/230 volts. Millions of Mighty Mites used in leading makes of electric motors have proved dependable performance.



ACTUAL SIZE MODEL SU-100-M



ACTUAL SIZE MODEL SU-100-L

Mighty Mite protectors add years of service life to any motor by continuously and automatically eliminating over-heating and charring of insulation, as well as possible burn-out. Mighty Mites are tamper-proof and cannot change their factory-set operating characteristics.



ACTUAL SIZE MODEL H-200-M

Mighty Mite units are accurately pre-calibrated at the required break temperature up to 200°C. They are supplied in special "ready-to-use" packages, and require no further sorting, adjusting or other handling prior to actual installation on the motor assembly line.

Mighty Mite thermal protectors can be conveniently fitted into practically any stator design. In operation, they will automatically break the circuit to the stator field whenever the motor exceeds a predetermined safe operating temperature. When the temperature returns to normal, the Mighty Mite will automatically reconnect the circuit.

SAMPLES AND ENGINEERING AID AVAILABLE



MECHANICAL INDUSTRIES PRODUCTION CO.

## For reliability in refrigeration and air conditioning equipment—look to VILTER!

With the Vilter line you will find reliability an accepted byword nationally. Thousands of satisfied customers will stand up for Vilter equipment's dependable service; long life; efficient, economical performance—equipment backed by ninety years of intense activity in engineering, research, and installation know-how in the refrigeration and air conditioning industry.

With the versatile Vilter line you can handle practically any commercial and industrial refrigeration and air conditioning application in your area on an attractive competitive basis. Included in the Vilter line are ammonia and Freon compressors from 10 HP to 200 HP and larger, booster compressors, condensers, blast freezers, Uni-Chillers, brine coolers, heat exchangers, Pakicers, Polarflake ice machines, latent heat storage systems, Vertibay coils, water coolers, shell and tube vessels, air conditioners,

Zer-O-Disc fin coils, and rotary liquid pumps among others. Vilter supplies equipment to the dairy, brewery, food, fishing, meat packing, canning, chemical, and vegetable processing industries; also for stores, churches, office buildings, and industrial plants.

Vilter distributors receive strong home office support. Engineering application counsel is always available. Field tests are conducted regularly to try new applications... to suggest installation improvements. The Vilter line is advertised widely in the trade press with distributor applications being featured.

It will pay you to consider the Vilter line for your area. Why not get acquainted? You will like our way of doing business. For full information write to Department G, The Vilter Manufacturing Company, 2217 South First Street, Milwaukee 7, Wisconsin.



REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wis.  
Ammonia & Freon Compressors • Pakice & Polarflake Ice Makers • Ammonia Liquid Transfer Systems • Evaporative & Shell Tube Condensers • Pipe Coils • Valves & Fittings



## NLRB Rules 'Hot Cargo' Contracts Invalid

WASHINGTON, D. C.—The National Labor Relations Board has ruled that "hot cargo" contracts with common carriers such as truck lines are invalid under the Taft-Hartly Act.

The ruling was made by a three-member majority of the board in a case where Local 728 of the Teamsters' Union was found to have violated the Act's secondary boycott ban by "advising" its members employed by truck lines that they could refuse to handle freight from the Genuine Parts Co., Atlanta.

The union was conducting a strike at the company's Atlanta plant. The clauses were contained in the union's Southeastern Area contracts with trucklines.

A "hot cargo" clause ordinarily provides that the employees covered may refuse to handle or work on goods designated by the union as "unfair."

The question of the validity of such a clause under the act's ban on secondary boycotts has been before the board several times. This is the first ruling in which a majority of the board has held such a clause to be invalid.

### 29 Now Have Them

## 4 Calif. Counties Adopt Bldg. Codes

SAN FRANCISCO — Four California counties have adopted new building codes. A total of 29 counties now have building codes out of a total of 60 counties in the state.

Fresno county and Madera county have ordinances including the Uniform Building Code, the Uniform Plumbing Code, and the National Electrical Code.

San Luis Obispo county has the Uniform Building Code, short form; and National Electrical Code.

Shasta county adopted a building code incorporating modifications of the Uniform Building Code, which applies in an urban area south of Anderson, north and east of Shasta lake, and in the Redding area.

### Sets Up District Office

PHILADELPHIA — Lord Mfg. Co., air conditioning engineer, has leased a suite of offices in the 1420 Walnut St. building through Frank G. Binswanger, Inc., for use as a district office.

**Redmond**  
**MICROMOTORS**  
 One of largest stocks  
 in the world!  
 FACTORY DISTRIBUTORS  
 MARVIN L. "FERGIE" FERGESTAD  
**CYCLE-FREEZE CORP.**  
 6318 Cambridge, Mpls. 16, Minn.  
 West 9-6794

**For Your Reprint Copy**  
 "Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.  
 Only 25¢ each.

## 'Forced Circulation, Free-Delivery, Air-Coolers for Refrigeration' Issued

WASHINGTON, D. C.—A new ARI Standard for "Forced Circulation, Free-Delivery, Air-Coolers for Refrigeration" has been issued by the Air-Conditioning & Refrigeration Institute, it was announced by Geo. S. Jones, Jr., managing director.

Numbered ARI Standard 420-57, the new publication is combined with an application-engineering standard, which establishes "specifications for the ap-

plication of forced-circulation, free-delivery air-coolers for refrigeration for the guidance of all segments of the industry and the user." The application-engineering standard is numbered 421-57.

Standard 420 defines "forced-circulation" and "free-delivery," as applied to air-coolers, "gross" and "net cooling effects," and other terms. It specifies the minimum equipment which shall

be included in forced-air, free-delivery air-coolers, and methods of rating and testing, connection sizes and markings.

A forward note in the single standard-folder containing both 420 and 421 states: "To permit manufacturers to incorporate changes into their equipment models, it is recommended that this standard become effective as of June 1, 1958."

The standards were prepared by the Engineering Committee of Sub-Section "A" of the ARI Heat Transfer Section, of which D. D. Wile, Recold Corp., is chairman. The publication containing both is available from ARI at 50 cents a copy.

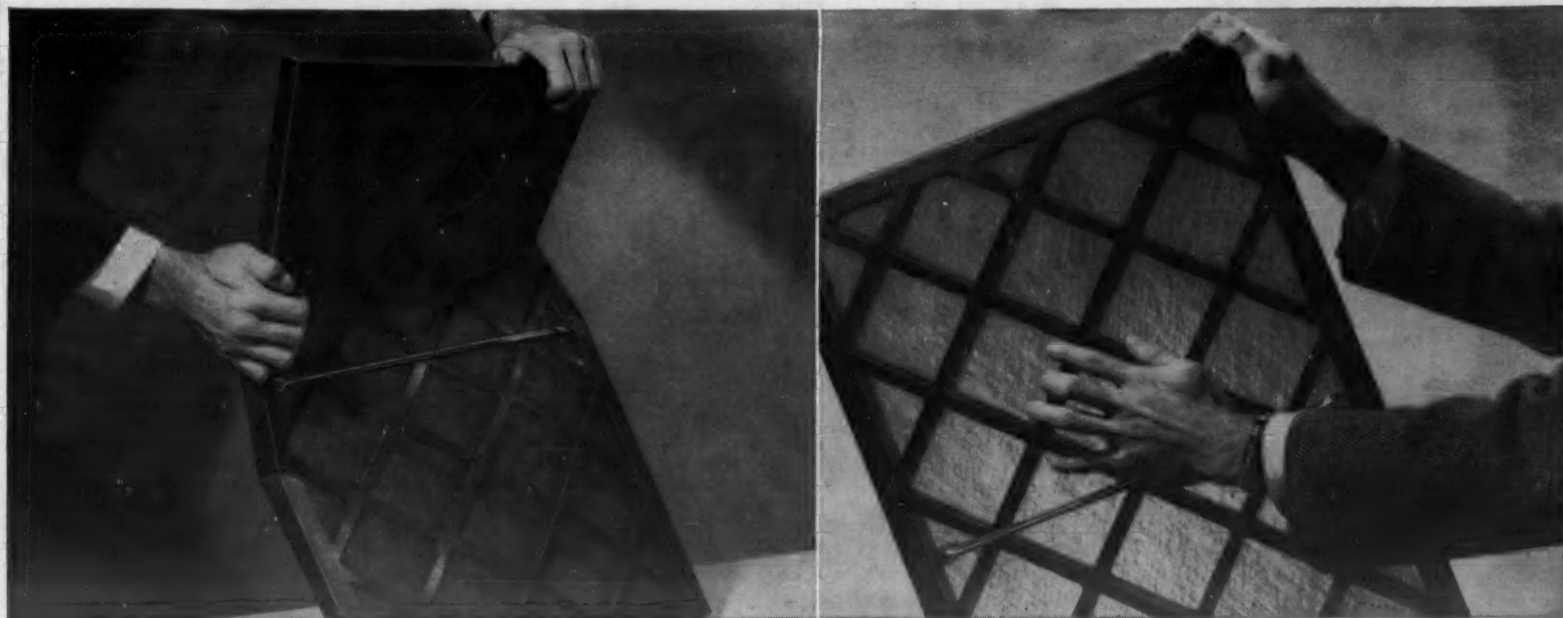
## Nashville RSES Elects Hamlet To Head Officers

NASHVILLE, Tenn.—Officers of the newly-organized Refrigeration Service Engineers Society here are Wilson Hamlet, president; Roy Angel of Kroger Co., vice pres.; John Gilmore, refrigeration engineer at Central Air Conditioning & Heating Co., secretary; and Albert Bradford of Swift Ice Cream Co., treasurer.

### W. C. Ballard Dies

William Charles Ballard, 57, recently died in Dayton. Since 1953 he had been proprietor of Ballard Refrigeration and Motor Service.

**PROVE IT TO YOURSELF**  
 ...how much stronger...how much safer  
**Glasfloss\* fiber glass Safety-Grille\* filters really are**  
\*TRADE MARK  
**MAKE THESE TESTS...**



**1. Bend it**—and the new Glasfloss Safety-Grille Filter bounces right back to its original shape. Old type metal-grille filters don't. Unless you re-bend them, they stay bent out of shape and can cut down filtering efficiency. Strong construction of Glasfloss Safety-Grille Filters means less chance of damage in transit, in storage, in handling.

**2. Feel the grille edge**—it's chipboard, and perfectly safe! No sharp edges—no cuts, no scratches to worry about!

For maintenance personnel, the new Glasfloss Safety-Grille eliminates any danger of cut hands or wrists and possible infection when changing filters.

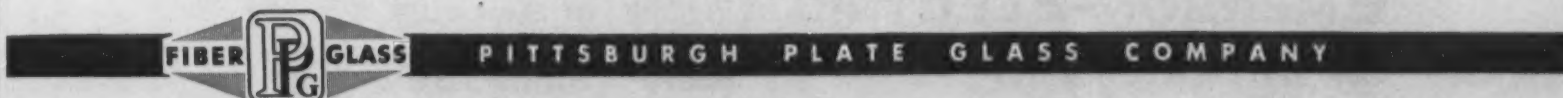
### Plus these features... Glasfloss Safety-Grille Fiber Glass Filters...

- have same available filtering area and initial pressure drop as old-type filters
- are tested and proven in service
- are approved by Underwriters' Laboratories, Inc.

Make these tests: Try PPG's new Glasfloss Fiber Glass Safety-Grille Filters in your heating and air conditioning systems. Get top filtering results! They're available in a complete range of sizes from your local distributor or PPG Warehouse.

**A Product of Pittsburgh Plate Glass Company**

Sales Offices are located in the following cities: Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh and St. Louis





# Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1) tion with competitors could be achieved at much less expense—in a cocktail lounge, say. Those exhibits, you know, cost real big dough.

## Sensible Suggestion

One can't blame association officers for scheduling their conclaves simultaneously with the ARI's semi-annual Exposition. Thereby they boost attendance at their shindigs by hitch-hiking on the latter's nation-wide lure. And members can save travel expenses by combining two trips into one.

At the same time, manufacturers who shell out thousands of dollars for their expensively-equipped booths have a legiti-

mate gripe. Here is a possible solution:

Each "association" which con-gathers simultaneously with the ARI Exhibition could schedule its meetings for mornings. Say, 8:30 a.m. to 1:30 p.m. (including lunch).

Thereupon the ARI could open its show at 2 p.m. each afternoon, and run it until 7 o'clock in the evening—when witching hours begin in corporate hospitality suites, in "big deal" hotel ballrooms, and at intimate spots where people who have something to thrash out can work out their quandries privately.

Thus: full attendance at the exhibits every afternoon.

## Footloose Footnotes

Those poor, weary guys who man the booths all day, and sit up all night entertaining customers in "hospitality suites"

and night clubs, could prolong their lives by sleeping it off every morning, and calling Room Service for a refreshing leisurely breakfast around noon—by virtue of this plan.

Then they'd be bright-eyed, bushy-tailed, and BETTER SALESMEN. And their employers wouldn't have to pay for a subsequent week's recuperation. Even ambitious young fellows can take only so much of this "patriotic flagellation" without wilting.

Quite several top executives who pay the bills for these tremendously costly expositions told "Dope" that never again will they exhibit to our industries twice in any one year, as they did in 1957.

Either the ARI and the ASHAE will get together and agree on alternate, non-conflicting, biennial exhibition dates, or the Big Brass of the "prestige

accounts" may leave both to wither on the vine.

That's what the Men said.

## Beer and Sex

Recently Joe Sullivan and "Dope" were entertained in Columbus, Ohio, by an immensely interesting father-and-son team—Gus Bowman, Sr. and Gus Bowman, Jr., of the Byer and Bowman advertising agency.

They served GAM beer, which happens to be one of their accounts (in our field, Copeland and Barnebey-Cheney are Byer and Bowman clients).

Now, it is not at all unusual for advertising agency people to bug us for ideas, information, copy themes, and even phraseology—in connection with air conditioning, refrigeration, and home appliance advertising campaigns.

However, this was the first time we've discussed beer adver-

tising strategy seriously with anyone. Seems that creating an advertising slogan for beer isn't nearly so easy or soothing as quaffing it.

Undaunted and intrigued, "Dope" presents the following rough idea, based on an obvious association with the trade name, GAM.



The Beer With a Leer

You'll note that, in addition to the emphasis on pleasure, the slogan has overtones of virility plus undertones of aphrodisia. Even Hadacol didn't offer that much benefit per bottle.

From a production-cost standpoint (you see, we think of everything) the campaign would be Economy Itself. No copy to write, no layouts to change.

Or, to get fancy, the Bowmans could vary the leg-art occasionally.

In that case the possibilities are infinite and the art costs would be zero. Just apply to MGM, NBC, CBS, RKO, etc., and get on their Cheesecake Circulation Lists.

Come to think of it, there's another idea. GAM could run a "Guess Whose" Legs-of-the-Month contest. First prize: a Marilyn Monroe calendar.

Subscribers are invited to offer further suggestions. No doubt the Bowmans will pay off with bottles of that good Gam, the "Beer with a Leer."

## Newcum Sees Wider Auto Cooling Market

Remco, Inc.  
Zelienople, Pennsylvania

Editor:  
I can't agree that there is a scant need for auto air conditioning in Michigan or any other of our Northern states.

This is my third summer with  
(Concluded on next page)

EXTRA
IMPORTANT NEWS
EXTRA

FOR AIR CONDITIONER MANUFACTURERS

**MOST OF THE NATION CAN LOOK FORWARD TO A HOT AND HUMID SUMMER**

That's the long-range prediction of the weather bureau. Above-average temperatures will prevail throughout the east, northeast, middle west, and southwest. Only the extreme north and east will be sweltering in those areas. Rainfall will be above average in the northeast. Frequent showers will increase in the south. With a hot and humid season in prospect, many consumers and retailers of air conditioning units, goods, beverages, and other items are preparing for the season.

CONGRESS WILL BE IN WASHINGTON in the next few days, eager and ready to start a record in an election year. Some members will have a chance to vote on issues which they think their constituents favor. For others, decisions will be difficult.

The legislative product of the 1957 first session of the Eighty-fifth Congress is being prepared. Politicians looking for records from. Other people say, "That's good."

Habit and custom dictate that most major bills are introduced in the first session of the 96th Congress. The House will be up for re-election in 15 months. That happens in 1957.

# EMERSON-ELECTRIC

## Shrinks Motor Depth ONE FULL INCH for Your New Thin Models

...and even temperatures will be about average. In the southeast, south and north sections of the country, and even temperatures will be about average. In the southeast, south and north sections of the country, and even temperatures will be about average. In the southeast, south and north sections of the country, and even temperatures will be about average.

3 1/2"  
1/12 h.p. 4-pole motor

### The Trend for '58

More compact... yet without loss of power! New Emerson-Electric shaded-pole motors have been reduced *one full inch* between the motor hubs. You will need these thinner motors in designing your new models!

Call, wire or write Dept. M-92 today for complete information, The Emerson Electric Mfg. Co., St. Louis 21, Mo.

**EMERSON-ELECTRIC**  
LIVE BETTER ELECTRICALLY



of St. Louis  
Since 1890

Here's Real News In Pipe Covering!

**STYROFOAM PIPE INSULATION**  
All sizes from 1/2" thru 16" pipe & tubing. Perfect Vapor Barrier. Quick, easy to apply. 36" lengths—feather-light. No outer covering needed. See your distributor, or write,

*glo-brite* PRODUCTS  
6415 N. CALIFORNIA AVE.,  
CHICAGO 45, ILLINOIS  
Wire or Phone—RO 1-4045



## Inside Dope NWAHACA OKs Heating Sales Drive--

By GEORGE F. TAUBENECK

(Concluded from preceding page)

air conditioning in my car and I wouldn't do without it. Fact is I have driven it to Detroit on several occasions rather than fly and rent an uncooled car!

It is not necessarily the heat, it is the humidity, plus the temperature build up from the sun load (even on a cloudy day) and from the engine.

I drove a Novi equipped test car around Detroit one day when the outside temperature was registering 64° F. in the shade and the compressor cycled frequently on the thermostat from sun load and heat build up.

So, don't let anybody tell you that the big market for air conditioning is in the Texas area alone. That certainly is a misconception. It is true that their season is longer but I use my air conditioning starting the first few warm afternoons in the latter part of February, through December, often using my heater in the morning and evening and my air conditioner through the day.

In such highly concentrated areas as Dallas and Fort Worth there are companies who concentrate on automobile air conditioning installation and service generally acting as a distributor for one of the local air conditioning manufacturers.

Operating a compressor continually where the refrigerant is by-passed involves only a slight friction load so it wouldn't quite be the problem that you seem to think.

KEN NEWCUM,  
Vice President

### Why the Giants Slept

Airtemp Division  
Dayton, Ohio

Editor:

I was interested in your "Inside Dope" article on auto air conditioning. Regarding your reasons why the so-called giants may have been asleep until recently, I think you possibly put overemphasis on the fact that these gentlemen live in Detroit where air conditioning is not necessary. This is true, but it is also true that most of them are fairly knowledgeable executives, and get around the country and world frequently.

It is difficult to appreciate the size of the automobile business where many parts are produced in quantities of 5,000 to 10,000 per day (not per year). This means that any new product which starts in low volume is bound to lose considerable money until it gets going because the whole automotive system is designed for high volume. So the main attitude is, "What will a new car accessory do for car sales in general?"

I believe it was just not felt that car air conditioning would help sell automobiles until the ice was broken and air conditioning became more popular.

I assume you know that Frigidaire is manufacturing their own clutches for General Motors and have been doing so for some time. However, this is designed for strictly manual disconnect rather than operation from the thermostat.

P. W. WYCKOFF,  
Chief Engineer

(Concluded from Page 1)

pected to meet for this purpose within the next two or three weeks.

The campaign has as its immediate aim the sale of 1,250,000 warm air systems in 1958, a jump of 30% over the 960,000 estimated for 1957. Of these million and a quarter systems 700,000 would be replacement installations, up 75% from the 400,000 such in 1957.

### 'Conditioned Air Specialist' Emblem

As presently outlined, the program would involve a "silver shield" emblem for use by dealers to be known as "conditioned air specialists" which would also be applied to systems measuring up to installation standards. Such installations would provide "guaranteed indoor comfort."

Funds for the campaign would

be raised, according to tentative plans, by assessing furnace manufacturers 30¢ per furnace; accessory manufacturers 0.2% of sales; wholesalers \$25 a year; dealers \$10 a year.

The two-day convention program began with a presentation by three trade paper representatives attempting to show that the residential air conditioning market "belonged" to the warm air and sheet metal contractor.

### 'Terre Haute Story' Draws Attention

Great interest was shown in the "Terre Haute Story" in which Frank J. Nunlist, executive vice president of Mueller Climatrol Div., and Walter Stevenson, a Terre Haute dealer, explained how a carefully planned advertising campaign helped Stevenson increase his sales from \$90,000 in 1954 to \$275,000

in 1956 without cutting prices.

"We at Mueller are convinced that the dealer is more important to sales than the brand name," Nunlist commented.

Making a profit was the running theme of the convention.

Detailed accounts of the various talks presented at the NWAHACA convention will be published in future issues of AIR CONDITIONING & REFRIGERATION NEWS.

This was emphasized in numerous panel presentations describing group advertising, selling quality systems, accessory equipment, engineering, standardizing, proper purchasing and financing.

### Describes Study

Wind-up session was devoted to technical talks on research at the University of Illinois. D. R. Bahnfleth described a study of supply outlet locations for heating a basement room, and J. R. Wright presented a comparison

of ceiling diffusers and inside wall floor registers when employed for cooling a residence.

Frank L. Meyer again heads the association as president for the coming year. Other officers re-elected include Tom Byrd, first vice president; George Boeddener, secretary-treasurer; and James Martin, assistant secretary-treasurer. Frank J. Nunlist was named second vice president.

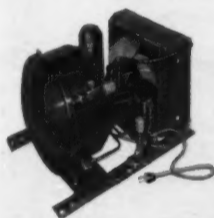
Board of trustees includes H. F. Brundage, E. J. Cullen, H. Gurney, G. D. Heeringa, J. F. Knoff, W. C. Kremser, T. W. McNeill, R. K. Miller, W. J. Olsen, H. F. Randolph, D. E. Sedgwick, R. Taylor, and G. W. Denges.

### Declares Dividend

CHICAGO — Directors of Whirlpool Corp. recently declared the regular quarterly cash dividends of 85 cents per share on the 4¼% cumulative convertible preferred stock and 35 cents per share on common.

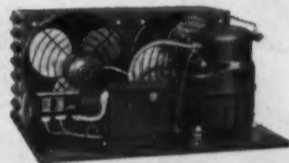
to  
serve  
you  
better!

# KELVINATOR OFFERS YOU A WIDER CHOICE OF MODELS FROM ONE DEPENDABLE SOURCE



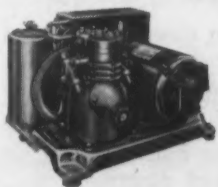
## SEALED UNITS

1/8 H.P. through 2 H.P.



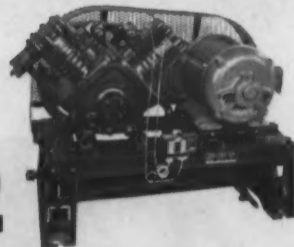
## COMPRESSORS

1/8 H.P. through 2 H.P.



## OPEN UNITS

1/4 H.P. through 5 H.P.



# Kelvinator

Division of American Motors Corp., Detroit 22, Michigan U.S.A. In Canada, Subsidiary of Kelvinator of Canada, Ltd., Toronto 18, Ontario

American Motors Means



Made For Americans

SPECIALISTS IN REFRIGERATION SINCE 1914



# Air Distribution Requirements In Year-Round Air Conditioning

## 3. Fundamentals of Conditioned Air (Cont.)

expressed in "pounds per cubic feet."

Density of atmospheres decrease with temperature as the temperature rises, but decreases proportionately with the altitude above sea level. The weight of an atmosphere varies with the barometric pressure and with the water vapor content it possesses. It varies inversely to the absolute temperature.

### Dry Air Used for Measurement

When equations are formulated for calculations, to express standardization, dry air (a term you will have noticed in the foregoing) is used as a basis for measurement. Therefore, atmospheres of varying compositions, used in practical observations

are corrected to the standard Density for Dry Air.

The U. S. Bureau of Standards publishes a standard atmosphere-altitude-pressure relation group of standards for such calculations. The unity basis for standard air is equivalent to a density for such atmospheres of .075 lbs/cu. ft. at sea level (29.92 in. of mercury barometric pressure) at 70° F. These relationships are repeated in Table III on opposite page, that illustration may be made of comparative differences.

The practical importance of density relationships is fundamental inasmuch as all practical evaluation of equipment intend-

ed for air handling and the atmospheres handled are expressed in density.

To this point temperature-volume relationships and pressure-volume relationships have been discussed separately. However, each is integrated in the practical evaluations of the behavior of atmospheres, therefore we must combine the two and discuss the entire relationship of temperature and pressure to atmospheric volume, and in so doing we find that this combined relationship is explained by three laws determined by three early Researchers—Boyle, Charles, and Dalton.

The combined definition of pressure-temperature-volume relationship from these three laws may be summed up as follows: The volume of a given weight of air, varies directly as the absolute temperature, and inversely as the barometric pressure.

Boyle discovered that at constant temperature the volume of a given weight of gas varies inversely as the pressure.

### Charles' Discovery

Charles discovered that (a) if the absolute pressure of a given weight of gas is maintained as a constant, its volume varies directly as the absolute temperature, and (b) if the volume of a given weight of gas is maintained as constant, the absolute pressure will vary directly as the absolute temperature. Mathematically this can be explained as follows:

$$(a) PV = RT$$

P representing the Absolute Pressure in lbs/sq. ft.

V representing the Specific Volume in cu. ft./lb.

R representing the constant for the gas involved.

T representing Absolute Temperature for the gas.

$$386$$

$$(b) V = \frac{M}{P}$$

V represents volume in cu. ft./lb. at Standard Barometric Pressure and 70° F.

(Continued on next page)

**Schnacke** HAS LED THE INDUSTRY — others have Followed!  
 was **1st** IN QUALITY — IN LOW PRICE AND NEW DEVELOPMENTS — with

### INTERCHANGEABLE PARTS FOR COMPLETE HIGH & LOW TEMPERATURE COMPRESSOR LINE

Same sleeves, pistons, valves, rods, seals, all wearing parts are used in all compressors, 5 HP to 75 HP, reducing manufacturing costs. Only line having these features.

### ADVANCE ENGINEERING FOR HIGHER SPEEDS OVER 11 YEARS AGO

Schnacke pioneered higher speeds with new design compressors — with square bore and stroke, dynamic balance — insert type bearings — automotive design, etc. which made possible lower prices.

### REFRIGERANT — COOLED REPLACEABLE SLEEVES

Suction gas is drawn through ports in block around sleeves, providing extra cooling effect — are slip fit and replaceable with modern suction valves and one piece discharge valve assembly with liquid relief spring.

### THERMATROL CAPACITY CONTROL

Maintains constant evaporator temperatures without cylinder unloading, unbalancing compressor or over heating. Simple trouble free suction modulating device proven successful in practical use for 10 years.

### COMPLETE PACKAGE WATER CHILLER LARGE CAPACITY 10 to 250 TONS

Completely factory designed and assembled liquid chiller with all refrigerant piping, wiring, starters, controls, eliminating field labor and usual installation hazards.

### DUAL TEMPERATURE PACKAGE STANDARD CHILLER WITH BOILER

Liquid chiller and attached boiler for heating and cooling — still exclusive with Schnacke. Capacities from 10 tons to 30 tons cooling. Provides selection of boiler.

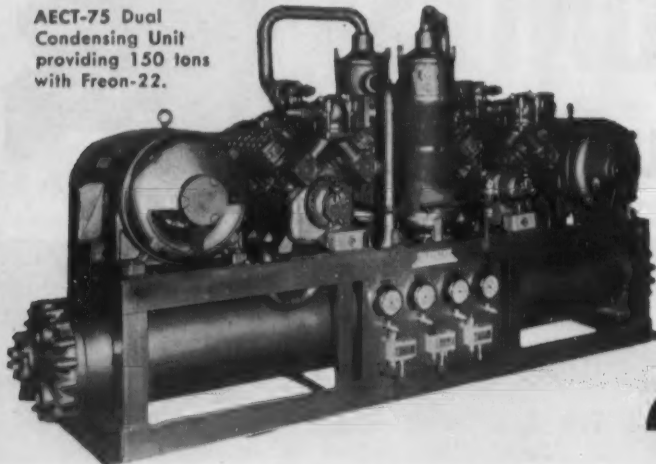
### BLOW THROUGH PROPELLER TYPE COOLING TOWER

First successful blow-through propeller cooling tower, requires less horsepower and provides dry fan and motor — and lowest prices in the industry.

### A MODERN DESIGNED COMPRESSOR — PLUS LOW PRICES

Schnacke proved that it could be done profitably. Schnacke has set the price standard — others have followed with lower prices.

AECT-75 Dual Condensing Unit providing 150 tons with Freon-22.



The trend of the industry in engineering design in recent years, has proven Schnacke leadership in advance engineering — in higher quality — in manufacturing advantages.

Schnacke will continue to set the pace for high quality equipment, improved design, and manufacturing methods, and low prices.

From a Consulting Engineer's letter — "The most rugged compressor when the going is really rough."

**SCHNACKE, INC.**

Evansville 7, Indiana

**R** Do you need a better source for large refrigeration and air conditioning control valves?

**CONTROLS**

SOLENOID VALVES  
 EVAPORATOR REGULATORS  
 WATER REGULATORS

REFRIGERATING SPECIALTIES CO.  
 3004 West Lexington Street, Chicago 12, Illinois



Table III—Air Density Ratios at Various Altitudes and Air Temperatures

Unity Basis = Standard Air Density of .075 lbs. per cu. ft.\*

\*At Sea Level (29.92 In. Barometric Pressure) This Is Equivalent to Dry Air at 70° F.

Air Temperature	Altitude In Feet Above Sea Level												
	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	15,000	20,000
	29.92	28.86	27.82	26.81	25.84	24.89	23.98	23.09	22.22	21.38	20.58	16.88	13.75
70°	1.000	.964	.930	.896	.864	.832	.801	.772	.743	.714	.688	.564	.460
100°	.946	.912	.880	.848	.818	.787	.758	.730	.703	.676	.651	.534	.435
150°	.869	.838	.808	.770	.751	.723	.696	.671	.646	.620	.598	.490	.400
200°	.803	.774	.747	.720	.694	.668	.643	.620	.596	.573	.552	.453	.369
250°	.747	.720	.694	.669	.645	.622	.598	.576	.555	.533	.514	.421	.344
300°	.697	.672	.648	.624	.604	.580	.558	.538	.518	.498	.480	.393	.321
350°	.654	.631	.608	.586	.565	.544	.524	.505	.486	.467	.450	.369	.301
400°	.616	.594	.573	.552	.532	.513	.493	.476	.458	.440	.424	.347	.283
450°	.582	.561	.542	.522	.503	.484	.466	.449	.433	.416	.401	.328	.268
500°	.552	.532	.513	.495	.477	.459	.442	.426	.410	.394	.380	.311	.254
550°	.525	.506	.488	.470	.454	.437	.421	.405	.390	.375	.361	.296	.242
600°	.500	.482	.465	.448	.432	.416	.400	.386	.372	.352	.344	.282	.230
650°	.477	.460	.444	.427	.412	.397	.382	.368	.354	.341	.328	.269	.219
700°	.457	.441	.425	.410	.395	.380	.366	.353	.340	.326	.315	.258	.210

Density directly proportional to Barometric Pressure established by the U. S. Standard Atmosphere—Altitude-Pressure relation. (Bureau of Standards Publication No. 82.) Density inversely proportional to absolute temperature.

Courtesy National Bureau of Standards and NAFM.

### Air Distribution--

TABLE III—Shows relationships of comparative differences of standard altitude-atmosphere-pressure.

(Continued from preceding page)

M represents the molecular weight of the gas.

NOTE: in (a) use 53.3 as the constant for air. Similar gas constant values, molecular weights and specific heats of various gases as well as air can be read from tables contained in the current issue of Heating, Ventilating and Air Conditioning Guide.

Dalton discovered that in air-water mixtures such as atmospheric air, the total pressure of the mixture is equal to the sum of the pressure which each would exert alone if occupying the area occupied by the mixture.

All three of these laws are in constant operation in the construction and distribution of Conditioned Air.

In the foregoing we have now covered, in generalities, the basic behavior of atmospheres under temperature, pressure, and combined temperature-volume, pressure-volume, and weight density relationships. Outlined in this basic behavior have been the physical Laws governing the actions that take place. Let us now investigate the effect of this basic behavior on air-atmospheres.

(To Be Continued)

### St. Louis Hotel Adds Cooling

ST. LOUIS — Announcing plans for extensive alteration and remodeling of the Kingsway hotel's exterior, B. H. Tureen, president of the Royale Investment Co. which has acquired the Kingshighway and West Pine Blvd. property, said that all rooms are now air conditioned.



**E-Z-SEE**  
**SPRING COMPENSATED!**  
**LIQUID INDICATORS**

E-Z-SEE Liquid Indicators with spring-compensated gaskets are positively leak-proof—proved by hundreds of thousands now in use. Suitable for Freon-12 and Freon-22 to pressures of 500 psi.

AVAILABLE TO THE TRADE THROUGH WHOLESALEERS EVERYWHERE

**REMCO INC.**  
ZELIENOPLE, PA.



So Halstead & Mitchell Engineers Said ...

**COUNTERFLOW, CLEANABLE WATER-COOLED CONDENSERS MAKE "CHAIN-REACTION" SALES**

**A CHAIN REACTION**—one sale leads to another when users experience the twin advantages of H&M's Water-Cooled Condensers—peak efficiency and lowest maintenance.

Double-tube design and counterflow introduction of water and refrigerant assure most efficient heat transfer. Refrigerant flows through the outer tube and the water through the inner tube for maximum heat interchange.

Removable headers permit easy water tube cleaning with a simple, accessory cleaning tool. Scale and sludge

which reduce heat transfer are removed without harmful chemical cleaners. Condenser capacity is maintained at clean-tube performance ratings for unit lifetime.

Condenser compactness makes these units ideal for conversion of under-capacity air-cooled refrigeration systems. All H&M units are U/L approved for use with refrigerants -12 or -22.

Call your wholesaler or write Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.

**ONLY HALSTEAD & MITCHELL OFFERS THIS WIDE CHOICE**

**HEAVY DUTY (Type T)** condensers have a highly favorable fouling factor and are designed for long service between cleanings. 1/2 through 25 tons.

**STANDARD DUTY (Type EL)** are made with extended surface water tubes, ideal for water-cooled systems under all average conditions. 1/2 through 3 tons.

**REPLACEMENT CONDENSERS (Type R)** are shorter, higher condensers designed for use in package air conditioners. Easily installed. 1 1/2 through 10 tons.

**SEA WATER CONDENSERS (Type SW)** are made with cupro-nickel water tubes and naval brass headers for resistance to impure water. 1/2 through 25 tons.





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reg. U.S. Pat.  
Office:  
Est. 1926

AIR CONDITIONING & REFRIGERATION **NEWS**

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Business News  
Publishing Co.

F. M. COCKRELL, Founder

**'The Conscience of the Industry'**

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CIRCULATION MGR., Herbert Spencer  
SUBSCRIPTION MGR., Rosalie Ashley  
READER'S SERVICE MGR.,  
Vincine Mogyorodi

Member, Audit Bureau of Circulations. Member, Associated Business Publications.

VOLUME 82, No. 14, SERIAL No. 1,497, DECEMBER 2, 1957

"The mass of people must be barbarous where there is no printing, and consequently knowledge is not generally diffused. Knowledge is diffused among our people by the newspapers."—Sam Johnson, *Boswell's Life*, March 31,



**SEEKS SMALL REFRIGERATOR SOURCE**

J. A. Bertha  
Manufacturers' Representative  
Houston, Texas

majority of them would be installed on ships.

Editor:  
I would like to locate the name or names of manufacturers who are now producing or would produce the following equipment:

In my contacts with marine supply and ship handlers within the Texas and Louisiana area I feel that I could be instrumental in disposing of several hundred of such units per year. My purpose, of course, is to locate the source of the manufacture and then make an arrangement with the manufacturer as a manufacturers' representative to represent them on an exclusive basis within the territory mentioned.

1. Four, six, and eight-cubic foot household refrigerators with stainless steel exterior and either porcelain, stainless steel, or anodized aluminum interior.
2. These refrigerators should be available for either AC or DC current inasmuch as a large

J. A. BERTHA

**SUNDAY SCHOOL STORY SOUGHT BY SYRACUSE READER**

Niagara Mohawk Power Corp.  
Syracuse, N. Y.

but am not sure). The particular story I am interested in is the one about the boy who came hom from Sunday School and told the story of Moses leading the Israelites across the Red Sea, in modern language rather than the way it was told to him by the teacher.

Editor:  
Your publication comes across my desk each week and I always enjoy reading the stories in "Inside Dope".

I would like to get a copy of a recent issue (believe it was the issue of Oct. 14 or Oct. 21—

ALICE C. MONTGOMERY

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**Needed: An Esperanto For Business**

COMMUNICATION has become the toughest, most difficult—yet most important—problem in American business today.

"They just don't speak my language, or understand it—and I can't seem to get through to them," fretted the engineering chief of one of America's biggest corporations recently. (He was referring to his associates, representing sales and management, on a Product Planning Committee.)

It is true that specialization of business endeavor breeds special languages, odd vocabularies, and slangy jargons. Birds of a feather tend to flock together, and exclude other specialists from their conversations. It's more comfortable that way, and less of a strain for the specialists.

Thus it has happened that the dialects of merchandising, engineering, and management have tended and trended to become almost as different and mutually incomprehensible as Sanskrit and cool teenage lingo.

An engineer's discussion of "quantums and factors" leaves a merchandiser helpless. A marketer's bandying of such items as "poll vectors and suborning of key outlets" leaves a metallurgist, or a lawyer whose specialty is mergers, out in a lingual void.

Incidentally, one type of engineer often speaks a different language from his brothers in different fields. And that's a pity—because, if they understood one another, chemists could help metallurgists, electronics specialists could assist refrigeration designers, etc.

Too often the modern professional business executive doesn't understand either his salesmen or engineers sufficiently well. Moreover, and more's the pity, he doesn't always feel that it's necessary. He operates on a presumably higher plane of programming, debentures, percentages, legalities, public relations projections, labor problems, association bedevilmets, and proxy fights for control. It's a different world this sometimes inhibited man inhabits.

No wonder so many conferences get so little done!

Engineers deal with tangibles. Knowledge they learned in college involves CERTAINTIES. In their world they can prove what's what and why. That's why they often feel superior to other breeds of businessmen. The latter, some engineers are apt to feel instinctively, could be akin to charlatans. Or, at best, they don't always know what they are doing and why. Engineers DO, you see.

Salesmen—in contrast—deal with intangibles, particularly human emotions. All

they can prove is that every human being is unlike any other (no two fingerprints or psyches are identical). Their specialty is psychology—which is, at best, a hard-to-pin-down "science."

Truly, both engineers and money-men need to recognize that:

*No mathematics of psychology exist.*

People who deal with people feel—sometimes helplessly sometimes—that engineers and comptrollers never will understand their peculiar problems. And quite often they don't.

Administrators, caught by the occasional panics of office politics and uncontrollable labor relations, tend to fear and distrust all specialized-types of associates who have more professional self-assurance than they do. "Uneasy lies the head which wears a crown."

Hence, corporate communications at top-level have become difficult, at middle range miserable, and at lower levels FUBAR (fouled up beyond all recognition).

Results of these impasses aren't pretty to contemplate. They probably cost American business—and consumers—millions of dollars a year in the aggregate.

Perhaps what we need is a new type of speech for business—somewhat akin to Esperanto (the contrived universal language). In conferences about product planning and marketing, surely, the various varieties of business specialists ought to understand one another for the good of all. How can they?

The big problem is mutual understanding through better communicating.

Of this we can be sure: translators and communicators will command higher and higher premiums at business conference tables in subsequent years. And the responsible business press (competent paid-circulation trade papers) will become more and more useful.

The bigger any business grows, the more it fosters specialists. In turn, the latter need interpreters to get the world's work done.

That's where we come in (the only all-industry paid-circulation newspaper in this business). Our job is interpretation, education, and the advancement of industry cooperation through dissemination of easily-understood information about all phases of every variety of refrigeration, heating, air conditioning, and major appliance problems.

Subscription price for this priceless help: only \$6 a year. Are you borrowing somebody else's copy?



## BASIC CHEMISTRY

(As Applied In Refrigeration)

### Part 3—Moisture and Oils

By Frank J. Versagi

What about moisture and oil? Does water affect oil as radically as it affects refrigerants?

No. Practically speaking, water and oil can remain in contact indefinitely without appreciably affecting the oil. Wet oil, of course, may speed the rusting of any iron present; in contact with refrigerants, wet oil may accelerate acid formation and corrosion, but the oil itself, does not actually react with the water. So oils must be kept dry, not for their own sake, but for the sake of the unit as a whole.

#### 'Almost as Dry As Refrigerants'

Thus, refrigeration grade lubricating oils are supplied almost as dry as refrigerants. For this reason, they will actually act as a desiccant—picking up water whenever exposed to it. This sometimes leads to difficulties.

Several servicemen have had the experience of tearing down a unit, dumping the bearings into oil to protect them while they worked on the rest of the unit. Often these bearings will be stained with rust after sitting in the oil for a day or two. The dry refrigeration grade oil takes the moisture out of the air in sufficient quantities to rust the bearings. If the bearings and oil were capped or protected from the air, no rusting would take place.

#### Keep Covered

Because these oils are in effect such good desiccants, manufacturers warn that they should be kept covered and poured only through clean, dry funnels.

Several laboratory tests were run to illustrate the relative importance of oxygen, heat, and moisture in oil breakdown. In one test, two identical samples of oil were wet then flushed—one with oxygen, the other with inert nitrogen.

Within a few hours, the oil flushed with oxygen began to discolor; that flushed with nitrogen remained clear for days until the test was discontinued. This proved that, by itself, water does not react with oil.

Further tests were run. Several samples of clean, dry refrigeration grade oil were heated to 225° F. under several conditions. The conditions were:

1. In air—oil dry, as supplied.
2. In air—water added to oil.
3. Flushed with oxygen—oil dry.
4. Flushed with oxygen—oil wet.
5. Flushed with nitrogen—oil dry.
6. Flushed with nitrogen—oil wet.

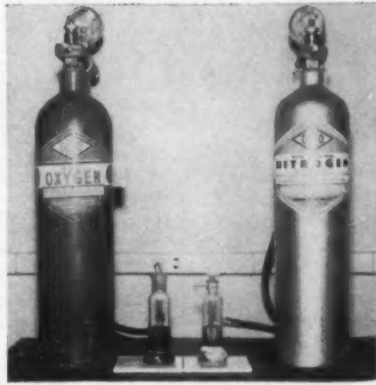
This series of tests demon-

strated clearly that the oxidation of wet oil causes the most rapid breakdown. (Thus water can accelerate a reaction even though it does not actually react itself. This is very similar to the test on rust formation we described in our series on corrosion.)

A low side leak, of course, will bring in moisture and air, so this laboratory finding has practical significance.

The hot dry oil, flushed with oxygen, broke down at a slower rate than the hot, wet oil. As would be expected, the tests with air followed closely those with oxygen, but the reactions took longer to take place.

The wet and dry samples



EXPERIMENT showing how oil reacts to introduction of oxygen or nitrogen.

flushed with nitrogen showed no breakdown for days and the tests were discontinued, since the breakdowns with air and oxygen occurred in hours. Actually, since nitrogen is an inert gas, it was used as a control sample—to exclude air which would cause oxidation.

Reviewing briefly, we have learned that air or oxygen is

the chief enemy of oil, that moisture may contribute to side reactions, but does not actually react with the oil.

#### Oxidation of Oil Generates Water

The oxidation of oil will generate water.

A refrigerant-oil mixture will break down faster than either substance when it is alone.

Each of the major types of oil has certain advantages and disadvantages which must be considered when a unit is serviced.

While equipment manufacturers are best qualified to make specific recommendations, a good rule to follow is to use naphthenic pale oils where operating conditions are average and where waxing at low temperatures would be a problem; use inhibited paraffin-base oils for severe operating conditions where high temperatures may be encountered.

(To Be Continued)

### Water Service Expands Philadelphia Branch

NEW YORK CITY—Water Service Laboratories, Inc., chemical engineers and specialists in corrosion control, has leased for its Philadelphia office the entire 11,000-sq. ft. building at 169 West Wyoming Ave.

The new branch contains nearly four times more space than the service organization's present Philadelphia office at 4010 Sansom St. Occupancy of the new building has been set for January, 1958.

This transaction marks the fourth expansion move by Water Service Laboratories in little more than a year. Other recent moves include the leasing of larger quarters for the company's New York headquarters, the opening of a new service annex, and the creation of a branch office in Richmond, Va.

## "DRI-COR"...

a New Name—a Finer Filter-Drier

You can expect the best from Henry. Here's the new "Dri-Cor" Filter-Drier. It incorporates an activated ceramic desiccant block for micronic filtration in combination with granular desiccant for high efficiency drying with low pressure drop. Drying and filtering are properly proportioned.

Like other Henry Driers the "Dri-Cor" is

thoroughly reactivated and pressure sealed at the factory, through the exclusive patented Henry Abso-Dry process.

This assures maximum drying efficiency at the time of installation. See this new type Filter-Drier at the show. It is definitely a "must" for those who demand the best.

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**What's New**

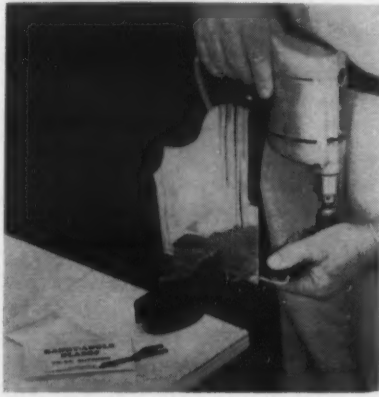
**Develops Blade for Reciprocating Saws**

—KEY NO. G-1210—

HAYWARD, Calif.—Development of a saw blade capable of satisfactory cutting performance in stainless steel, in use on portable high-speed reciprocating saws, has been jointly announced by Price & Rutzebeck, tool distributor, and the H. & T. Keesling Corp.

Initially, the new "Supreme" blades are available only in limited supply and in the "bayonet" design found best for contour work. Five sizes—with teeth per inch specifications of 10, 14, 18, 24, and 32, and usable cutting length of 1 1/2 in.—are listed.

Designed specifically for use with the Keesling-developed "Handy Angle" reciprocating saw,



they are distributed exclusively by Price & Rutzebeck in its "Parco" tool line.

**Production Tool Checks Platings, Coatings**

—KEY NO. G-1211—

METUCHEN, N. J.—Gulton Industries, Inc., has been awarded a license for the production of a "Laminagage," under patent rights held by the General Motors Corp. The Laminagage is a production

tool used for the checking of platings and coatings on metals and other electrically conductive materials. In use on the production or assembly line, the instrument measures thickness of enamel or ceramic coatings.

**Re-Designs Humidifier For Return Side**

—KEY NO. G-1212—

IRVINGTON, N. J.—Walton Laboratories, Inc. recently announced that model WF humidifier for installation on forced warm air furnaces has been re-designed so that installation can be made only on the air return side of the furnace.

Other design features have increased the output to better than 10 g.p.d. Because an atomizer principle unit is used, the action is positive and not dependent on the dryness of air or other varying conditions which might control the rate of operation, the company claims.



**Flux Increases Solder Bond**

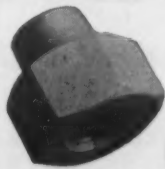
—KEY NO. G-1213—

PHILADELPHIA — Farrelloy Co. recently developed a new "AG" flux which increases the bond of silver solder on stainless steel, monel, nickel, copper, brass, bronze, and steel, it was claimed.

AG flux is low melting with a scavenging action that acts on the silver solder to eliminate the time lag between fluidity of the solder and its adherence to the parent metal. It increases the spreading action of the silver solder and increases the tinning coverage, saving precious silver.

Material reduces the mechanical skill required of the operator, as it withstands a wide range of heat.

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**Large-Family Upright Freezer Holds 750 Lbs.**

—KEY NO. G-1214—

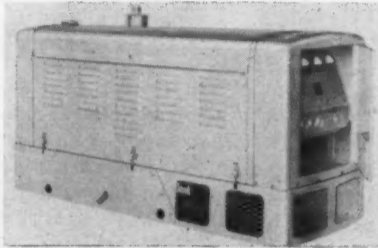
MANITOWOC, Wis.—A new upright freezer for large families and rural residents has been introduced by the Manitowoc Equipment Works. Capacity is 22 cu. ft.—enough for 750 lbs. of food.

The new "22" has a square top, a frost white exterior with gold and chrome trim, and pastel yellow compartments. It features a leak-proof, vacuum-tested cabinet and carries coils in all walls, top, and bottom. The arrangement of coils provides a freezing surface of 33.6 sq. ft.—a way to maintain con-



stant cold and thus prevent food spoilage, the firm said.

**Offers Revolving Armature Electric Plant**



—KEY NO. G-1215—

MINNEAPOLIS—Savings of up to \$300 per unit is claimed by

D. W. Onan & Sons, Inc. on its new HC series of water-cooled, revolving-armature 10 and 15 kw. electric plants.

New series is available in either 10,000 or 15,000 watt a.c. size ranges in voltages to 460 v. Completely self-contained, these gas-line engine driven units will provide full-rated electric power for all types of standby emergency applications in multi-room buildings.

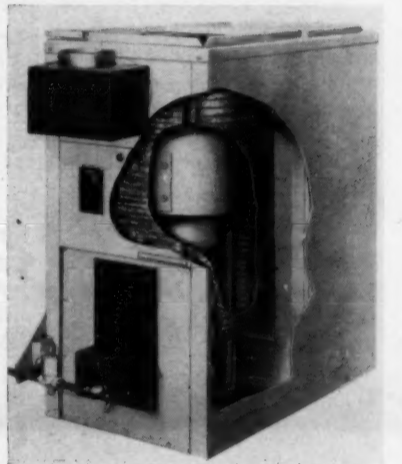
**Produces Gas-Fired Winter Air Conditioner**

—KEY NO. G-1216—

GARWOOD, N. J.—A new series of gas-fired winter air conditioners, designed to insure low-cost heating, was announced here by the Thatcher Furnace Co.

The high-strength heat exchanger unit on the new series, numbered 552, has electrically welded seams to prevent infiltration of air and escape of unpleasant odors. A single port, up-shot burner provides clean and efficient fuel consumption.

Five models are included in the new series with B.t.u. at bonnet ranging from 64,000 to 152,000. The two smaller models are equipped with direct-drive blowers. An automatic humidifier is optional.



**Uses Foam Resin To Make Rigid Insulation**

—KEY NO. G-1217—

WILMINGTON, Del.—"Dulux" foam resin R-42, a polyester resin which is used to make rigid

urethane foams for heat insulation and sound proofing, has been offered by the Finishes Div., E. I. du Pont de Nemours & Co., Inc.

**Information Center**

For more information on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

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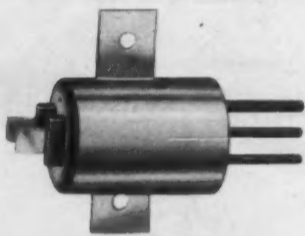
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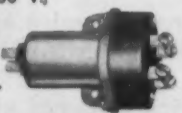
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**CONTACTS—Rating** up to 8 amperes at 115 volts, non-inductive. **Combination:** specify either single pole, single throw, or single pole normally open or normally closed. **Insulation:** Molded bakelite, tested at 1,500 volts, 60 cycles. **Terminals:** Three contact leads plugged with molded bakelite. Specify either A.M.P. or Douglas type terminals.

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## If Heating Firm Has Cut Corners, It Is Hard To Sell Proper Cooling Because of Cost, Contractor Finds

By George M. Hanning

ST. CLAIR SHORES, Mich.—“Too many people are paying cash,” mourns Fred Crawford, owner of the Home Comfort Heating Co. here.

This may seem a strange lament on the face of it, but Crawford explains:

“When 90 to 95% of the people are putting in heating equipment under FHA loans or other time payment plan, then the market is broad and people are confident of the future.

“But when half your sales are for cash, that means that money is tight and the customer is loaded up to the neck with time payments for other merchandise.

### CASH BUYER IS PRICE CONSCIOUS

“The cash buyer is much more price conscious than the time buyer, too. He expects a lot more for his money than the man who merely signs his name on the dotted line.”

But cash or time, Crawford is ready for the prospect who wants to modernize his home. Handling the Hall-Neal Furnace Co.'s “Victoire” exclusively, he has his office and showroom on Harper Ave. in this east Detroit suburb, year-round air conditioned with a Victoire air-cooled unit.

The unit is mounted in a corner of the showroom where Crawford can easily demonstrate its operation and illustrate the amount of space it will take up in the prospect's home.

He also has the unit equipped with a Trion electronic air cleaner. To demonstrate the advantages of this unit, he keeps a white filter installed in the air conditioner. He shows this to customers to prove that all the dirt and dust is being taken out by the electronic cleaner.

As a further convincer, he keeps the dirt washed off the electronic plates in a glass jug to show just how much contamination has been removed from the air by the filter.

Living in a community largely filled with project homes, Crawford finds it hard to sell a proper residential air conditioning system—though cooling systems are being sold in them, he admits.

### MINIMUM HEATING

The problem is that the builder has beat the heating man's price down so far that he cannot afford to install more than minimum heating. When the customer wants air conditioning, it will require larger ducts, more registers, larger blower, and

larger motor to put in air conditioning that is comfortable.

In one recent case, Crawford recalled, the only thing he could salvage out of the homeowner's present system was the register boxes. With the owner expecting to add air conditioning to his present system for \$1,000, the estimated \$2,200 to air condition for comfort seemed far out of line.

He pointed out that he could never recover the added cost from the home.

Crawford, of course, did not get the job. But that is the condition we are faced with, he said.

## ASHAE Sound Level Standards Will Consider Frequency Distribution of Sound Spectrum

NEW YORK CITY — The American Society of Heating & Air-Conditioning Engineers and the American Society of Refrigerating Engineers joint committee appointed to prepare a standard for measuring the sound output of air conditioning equipment will be guided by the data developed from a fan-noise program conducted at the ASHAE Research Laboratory in Cleveland, according to ASHAE.

The ASHAE program was an investigation of four methods for determining the acoustic power output of a fan by octave-band analysis.

“Previous standards for rating the noise output of fans were based only upon over-all sound levels with little regard

for the frequency distribution of their sound spectrum,” it was pointed out.

“Experience has shown that this frequency distribution is important both from the standpoint of loudness and annoyance and in choosing the type and method of acoustic treatment needed to reduce the noise level.

“The relationships between noise level and frequency distribution, and their effects on annoyance, speech interference, and speech audibility, are being established by various investigations throughout the country.

“In an air conditioning system the common noise source is an air-moving device, such as a fan or blower, and the noise path may be the duct system

which couples the air-moving device to the conditioned space.

“Since criteria have been established regarding annoyance and its relationship to noise level and frequency distribution for different types of environments, it follows then that for effective noise control in an air conditioning system, in order to obtain a desired criteria, the acoustic characteristics of the duct system and the noise output of the fan must be known or readily measured.

“There are still many aspects concerning the attenuation of sound in ducts and components which should be studied. Contemplated as a future phase of the ASHAE program is the study of many angles of sound transmission.”

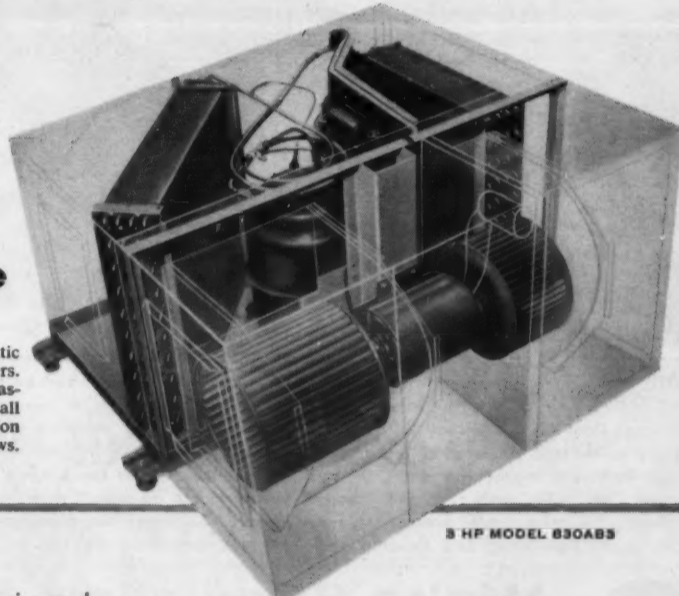
## Hundreds of Dollars Easier to Sell! Hours and Hours Faster to Install!

# FEDDERS

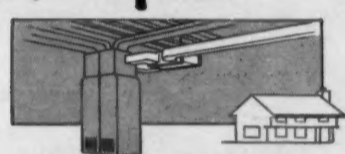
all in one

# Adaptomatic

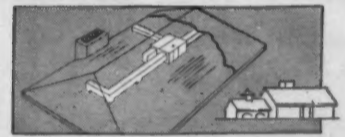
- No refrigerant piping
- No water lines
- Built-in low voltage panel
- Fits through 24 inch openings
- Pressurized air system permits installation anywhere



X-ray view of 3 HP Adaptomatic shows built-in centrifugal blowers. Entire unit shipped completely assembled. When necessary, for small openings, complete blower section detaches by removing only 8 screws.



Can connect to warm-air system utilizing same ducts for heating and cooling to slash costs.



In attic or garage roof — Can be installed in any interior location to save duct work.



For stores, offices and other open areas, discharge return plenum eliminates need for cold air ducts.

Only the Fedders Adaptomatic is *engineered* and *priced* to make it easy for your average-income customers to buy . . . easy for you to sell. Proved in thousands of installations.

**Fast, Easy Installation**—An Adaptomatic exclusive that pleases customers . . . makes you money. No expensive structural changes needed . . . no water pipes or cooling towers . . . no on-site charging of hermetic lines. Split chassis design gets unit through openings small as 24 inches square. Ducts to outside fit between studs without cutting.

*Plus:*

**Fedders exclusive system of Pressurized Condenser Air** — permits installation of Adaptomatic anywhere in existing homes . . . with maximum efficiency and minimum ductwork.

**Happy Result:** You sell Fedders Adaptomatics easier and faster because final cost is *hundred of dollars less* . . . brings central air conditioning within reach of additional thousands of families. Available in 2 HP and 3 HP models.

### FOR EXTRA BUSINESS! 2 New Adaptomatic Models!

**New 3 HP Water-Cooled Adaptomatic** . . . for large areas isolated from outdoor air source. New Discharge-Return Plenum eliminates need for any ducts. Ideal for fine stores where ductwork would impair decor, for large offices unserviceable by window units.

**New 3 HP Heat Pump Adaptomatic** — provides winter heating, summer cooling at a price only slightly above straight cooling models . . . hundreds of dollars less than other heat pump central air conditioners. Optional duct heater available.

### INTRODUCING! Fedders Remote Air Conditioning Systems

Now Fedders offers a complete line of remote central air conditioners—up to 5 HP—to solve every possible air conditioning problem. New remote units incorporate Fedders exclusives . . . arrive factory-tested and pre-charged . . . to eliminate toughest, meanest part of installation.

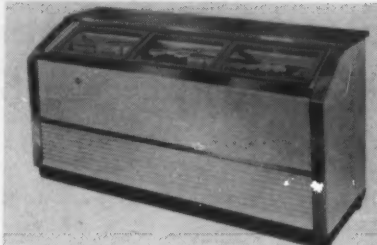
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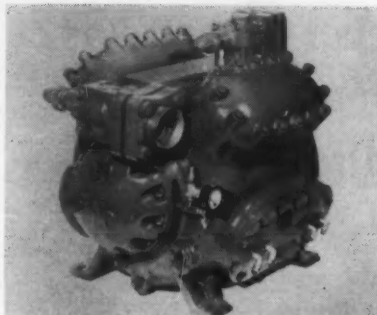
# What Was New

New products galore were on display at the 10th Air Conditioning & Refrigeration Industry Exposition in Chicago. On another page the NEWS also presents pictures of many highlights of the show. Additional pictures will be published in future issues. For more details on any of these products please use "Information Center" blank on page 12. Refer to product by Key Number.



KEY NO. G-12123

BELIEVING color produces an emotional urge in shoppers that results in immediately increased buying. Bally Case & Cooler Co. is stressing that in its new ice cream display case. This original white porcelain angle freezer, when used as checkout counter, is reported to push ice cream sales up. Available in two models, one is 6 ft. long of 13.5-cu. ft. capacity which holds 667 Philadelphia pints, the other 8 ft. long with 19.1-cu. ft. capacity and holds 951 Philadelphia pints. New models are finished in lemon ice colored porcelain.



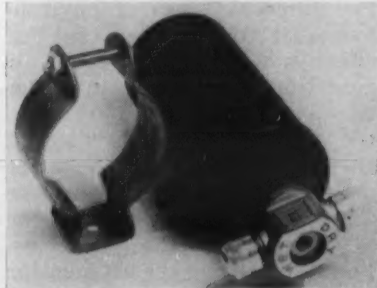
KEY NO. G-12126

REFRIGERATION compressors in sizes from 7½ through 75 hp. have been unveiled by Bell & Gossett Co. An all new line of condensing units up to 150 hp. also has been offered.



KEY NO. G-12130

GRILLE of this "In-a-Wall" remote "Oasis" water cooler covers the unit when installed in or behind a wall. Unit is also adaptable for mounting to basement overhead joists. Available in 5 or 10 g.p.h. sizes, the electric coolers have both drain and adjustable thermostat located in front for easy access.



KEY NO. G-1218

AUTOMOTIVE air conditioning receiver-drier introduced by Ansul Chemical Co. (with sight glass and moisture indicator) incorporates "T-Flo" principle.



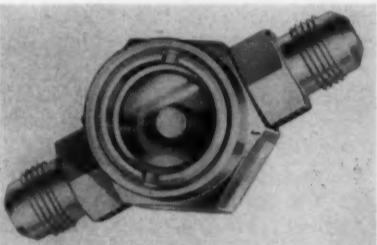
KEY NO. G-12120

SIX DIFFERENT models of Minneapolis-Honeywell's T870 thermostat are available for heating and air conditioning control. Manual, semi-automatic, and completely automatic changeover units of the rectangular-shaped model feature bronze, white, and dark-brown color scheme. Heating and cooling circuitry are separate on the unit with heat-cool setting levers in even-degree calibration from 56° to 94°.



KEY NO. G-12124

PRESSURE-TYPE "Hot and Cold" water cooler that is plumbed into the building's water system delivers both hot and cold water and has accessory kits for soluble coffee, chocolate, and soups has been introduced by Westinghouse Electric Corp.



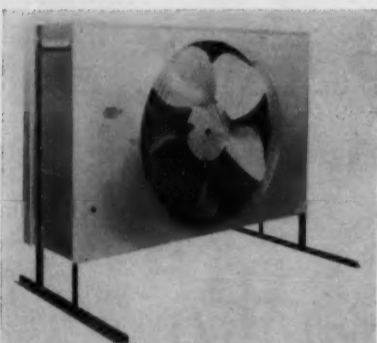
KEY NO. G-12127

COMBINATION moisture and liquid indicator developed by Sporlan Valve tells the amount of refrigerant in a system and whether it is wet or dry. "See-All" is available in ¼, ⅜, and ½-in. male flare, female-male flare, and ODF sweat connections and ⅝-in. ODT. Indicator dot shows dark green when the refrigerant is dry, chartreuse if the moisture content is in the danger range, and yellow if moisture is beyond tolerable limit.



KEY NO. G-12131

SLIDING DOOR FRONTS for wall-type low temperature cabinets to display frozen foods in retail markets, was shown by Barr Mfg. Co. The standard size doors are self-closing, and the whole display assembly, including basket, shelves, and lighting, are part of the complete package furnished by Barr. They have Underwriters' Laboratories approval.



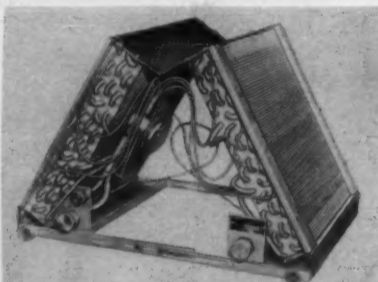
KEY NO. G-1219

AIR-COOLED "BC" condenser by Dunham-Bush, Inc. is available from .5 to 50 tons capacity, can be placed remotely for air conditioning and refrigeration needs.



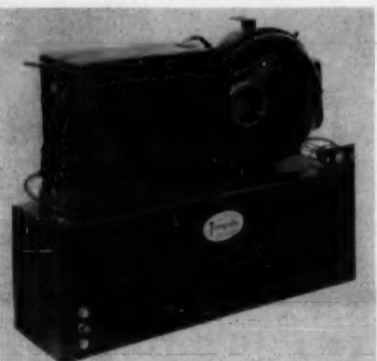
KEY NO. G-12121

OBLONG pre-mix cooler made by Heat-X, Inc., subsidiary of Dunham-Bush, Inc., has been introduced. In and out openings (capped) may be seen in center foreground at top of unit.



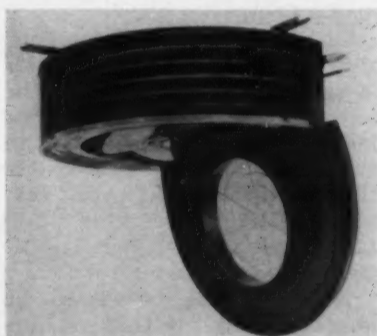
KEY NO. G-12125

COMPLETELY adjustable, new "Flex-A-Coil" cooling coil developed by Perfection Industries is built on a new telescopic frame that allows selection of a wide range of sizes to fit all upflow-type furnaces. It eliminates the bulging effect in a ductwork, can be placed directly atop the "Frostop" heating cables prevent the sliding doors from icing and freezing shut.



KEY NO. G-12128

DESIGNED for installation within building walls or other remote locations is Temprite Products' new model WR-5 "Wall-remote" drinking water cooler. It can be installed with either new or existing wall fountains accommodating "built-in" requirements. It may be put in under serving counters or may be mounted on overhead wall brackets.



KEY NO. G-12132

HINGED DRAIN PAN which lowers for easy access to fan and coil (in photo above) marks the new line of HT "Humi-Temp" coils introduced by Larkin Coils, Inc. Also shown was a new series of "Zephyrcon" air-cooled condensers (below). Belt-driven, the line has five models ranging in capacities from 5 to 20 tons, and engineered for parallel use to accommodate systems of virtually any capacity.

## Handy Tube Bender

Smoothly Bends any pipe or Tubing ⅜"-1½" O.D.

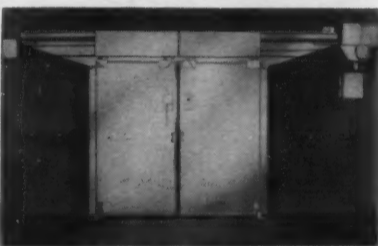


• Just a twist of the wrist assures perfect, even bends — right angle, any angle, U and offset. Save enough on ONE job to pay for your HANDY BENDER.

See your supply house—or write for free folder today.

HOLSCLAW BROS., INC.

428 N. Willow Road • Evansville, Indiana



KEY NO. G-12122

THIS PROTOTYPE power-operated horizontal sliding door is shown by Jamison Cold Storage Door Co. "Electroglide" door has compression seals made at all edges by a cam lock that moves the doors in and down as they close in the center. ductwork, can be placed directly atop the "Frostop" heating cables prevent the sliding doors from icing and freezing shut.

## We're Specialists In

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Air Conditioning

Electric Motors, Too!

## PARTS and SUPPLIES

Over 10,000 items...most complete list in the world... carried in stock! You'll find them all in the NEW Harry Alter Dependabook No. 167 for Fall-Winter, 1957-58.

Write on your letterhead for the DEPENDABOOK

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Chicago 16, Ill. New York 13, N. Y. Dallas 7, Tex. Atlanta 10, Ga.  
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FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG HOUSES



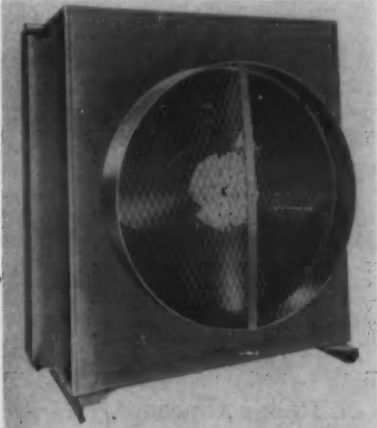
SAVE MONEY, time, effort by ordering from this complete catalog. WHOLESALE ONLY

CUSTOM-MADE metal frame filters have been added to the Stoddard Industries line of electrostatic "Dust-magnet" filters in ½-in. size. For air conditioners and warm air furnaces, the custom-made filters are of polystyrene, the fibers of which maintain a charge that attracts dust particles. Filter is claimed to resist humidity and excess heat, requires no treatment or service other than occasional washing.

KEY NO. G-12129

### MARSH Instruments

THE SERVICEMAN LINE of Testing Gauges, Testing Thermometers, Timers, etc.  
PRESSURE GAUGES and Dial Thermometers for all services.  
MARSH-ELECTRIMATIC, Water Regulating Valves, Solenoid Valves.  
MARSH INSTRUMENT COMPANY  
Solex Affiliate of Jav. P. Marsh Corporation  
Dept. D., Skokie, Ill.



For Your Reprint Copy  
"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.  
Only 25¢ each.



# What's Going On in HEATING

News of Methods, Products, People

Advisory Group Makes First Proposed Los Angeles Code Revisions

## 'Heating' Jobs over \$50 Require Permit; To Change Heating, Ventilating, Air Conditioning Specialist Definition

LOS ANGELES — First revisions of the Los Angeles heating code were made by the heating code industry advisory committee at a recent meeting.

This meeting followed procedure carefully set up at organization meetings, and completed action on Division I, administrative provisions of the heating code.

Each section was read and each committee member had an

opportunity to comment or make suggestions. Definite action was taken on each section by a motion to approve, disapprove, or modify, and that action is final, as far as current code revision meetings are concerned.

Non-voting general chairman for code meetings is Arthur G. Clark, assistant chief of the mechanical bureau, Los Angeles city department of building and safety.

tion should not be permitted. In order that large plants not be deprived of much-needed maintenance men, a change in the definition will be made.

Only professional mechanical engineers registered with the state of California can sign plans and specifications for heating equipment with a capacity of 500,000 B.t.u. or more, or with air conditioning equipment

of 25 hp. or more, the committee decided. This requirement does not apply for residential purposes.

Departmental financial records show the Heating Div. has been losing money for "quite a while." Accordingly the committee approved increases in inspection fees.

Here are the fees paid now, according to the 1956 official inspector's edition of the Los Angeles city plumbing, heating, and refrigeration codes:

\$1 for issuing each permit, plus

\$1 for the installation, alteration of, addition to or replace-

ment of each warm air heating appliance regulated by this code.

25 cents for the installation of each warm air outlet, in excess of four such outlets, plus

\$1 for the installation of each combustion products vent, other than a chimney complying with the requirements of the Building Code.

\$1 for issuing each refrigerating equipment permit.

\$1 for each 100 lbs. of refrigerant, or fraction thereof, in excess of the first 50 lbs., plus

\$2 for each refrigerant compressor, plus

\$2 for the alteration or re-

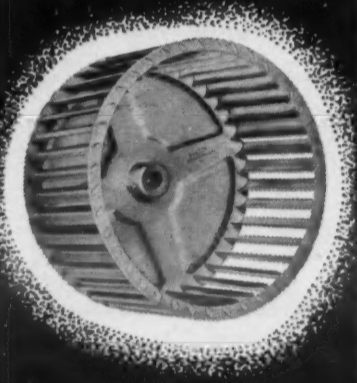
(Concluded on next page)

Welbilt CORPORATION

uses

REVCOR BLASTAIRE BLOWER WHEELS

Because they can depend on Revcor Wheels to give them constant reliable performance!



REVCOR SINGLE AND DOUBLE INLET BLASTAIRE BLOWER WHEELS ARE USED BY OVER 60% OF THE ROOM AIR CONDITIONER MANUFACTURERS!

Write For Technical Details

Revcor INC. ENGINEERS • MANUFACTURERS 251 EDWARDS STREET CARPENTERSVILLE, ILLINOIS

Instead of the words "warm air heating," the committee voted to use just the word "heating" in this part of the code, so as to cover all types of heating.

Instead of requiring a permit for repair, maintenance, and adjustment jobs costing over \$100, the committee cut that amount in half. Jobs costing over \$50 for labor and materials will require a permit.

"Heating, Ventilating, and Air Conditioning Specialist" is one of those qualified to get permits from the department.

It was stated this classifica-



C. C. OWEN



L. W. SUTHERLAND

### Janitrol Appoints Owen, Sutherland to New Posts

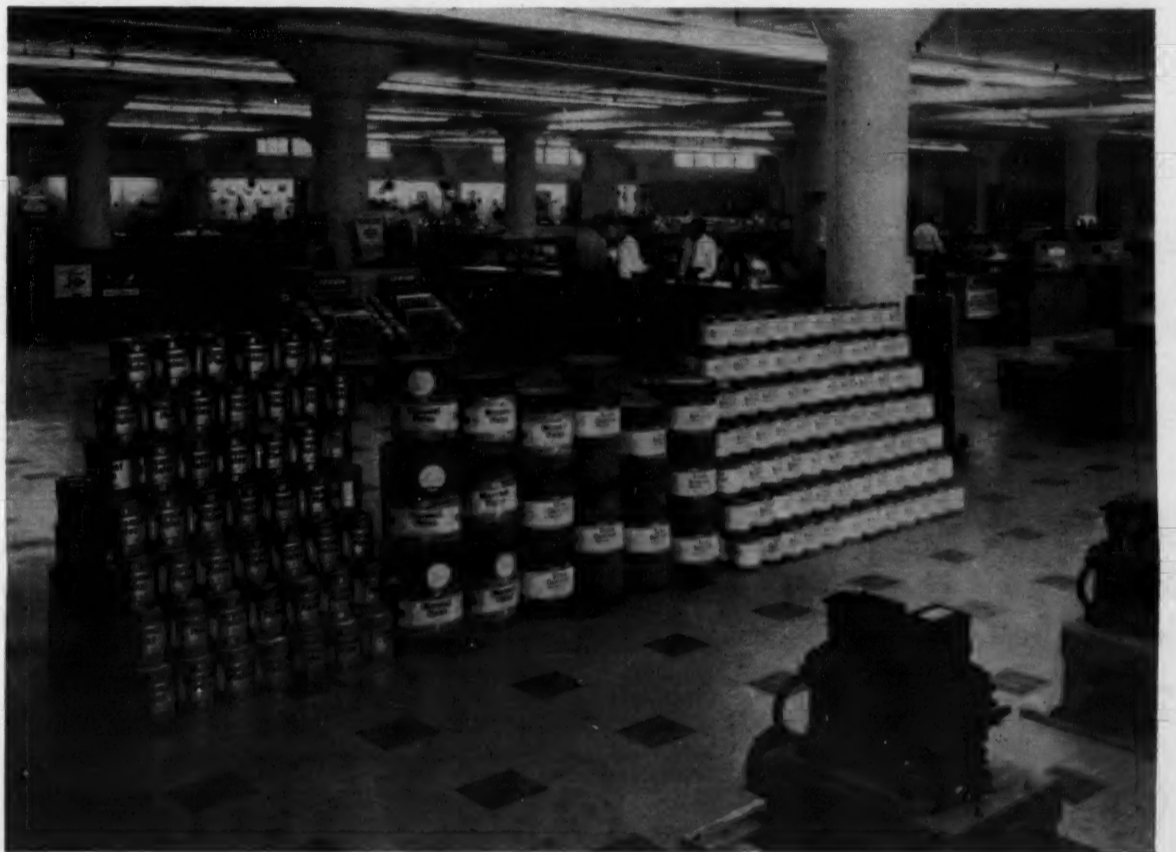
COLUMBUS, Ohio — A reorganization of the sales section of the Janitrol Heating & Air Conditioning Div. of Surface Combustion Corp. has been announced by H. C. Gurney, division general sales manager.

Named to new positions are C. C. Owen as national field sales manager and L. W. Sutherland as manager of product planning and engineering services.

Owen, who has previously served as assistant sales manager, western division, will be responsible for the direction, development, and supervision of the Janitrol field sales organization; the administration in the field of marketing and distribution policies, quotas, and budgets; and implementation in the field of sales and merchandising programs.

The field engineering services group has been transferred from the engineering section to the sales section, under the direction of L. W. Sutherland. He will have the primary responsibility for guiding the product line planning, and direction of the engineering services group and product application department.

No other changes have been made in Janitrol sales management positions.



"our customers use

CALGON'S BIG 3 BY THE TRUCKLOAD"

says Bill Hauber, Marketing V.P. of Thermal Supply, Houston



Thermal Supply has the kind of hustle that it takes to keep pace with fast-growing Houston. Take their new, block-square building with its airy, spacious floor. Here Thermal's customers can inspect and choose materials and supplies with maximum convenience.

Prominently featured on this display floor and those of their other branches through Texas and Louisiana are Calgon's Big 3 cooling water treatment products. Thermal's customers have found the use of Calgon Scale Remover, Micromet Plates and Calgon Algaecide gets systems clean and keeps them clean. Maintenance and power costs are kept down, and their customers stay satisfied. Here's how they work:

**CALGON\* SCALE REMOVER** makes it easy to clean up a system completely. Corrosion inhibitors protect system while in use. Special built-in pH color indicator shows how much of scale remover to use, and helps tell when system is clean.

**MICROMET\* PLATES** provide continuous treatment to inhibit further scale formation. A single charge will last about six months and the inexpensive feeding bag is easily installed.

**CALGON\* ALGAECIDE** controls algae and slime growths. Positive action kills the growth. Periodic addition keeps equipment operating efficiently.

See your refrigeration wholesaler for Calgon's Big 3!

\*T.M. Reg. U.S. Pat. Off.

CALGON COMPANY

DIVISION OF HAGAN CHEMICALS & CONTROLS, INC. HAGAN BUILDING, PITTSBURGH 30, PENNSYLVANIA DIVISIONS: CALGON COMPANY, HALL LABORATORIES



LOS ANGELES HEATING INDUSTRY code advisory committee is shown at the first of a series of revision meetings. From the left, clockwise around the table: A. B. Wicks, principal inspector, Heating & Refrigeration Div., Dept. of Bldg. & Safety; Hal Fitzgerald, Dept. of Bldg. & Safety; Arthur G. Clark, assistant chief of mechanical bureau, Dept. of Bldg. & Safety; F. O. Suffron, Pacific Coast Gas Assn.; Arnold D. Carlin, American Society of Heating & Air-Conditioning Engineers; Lawrence E. Mawn, American Institute of Architects; Lester R. Kelly, Los Angeles chamber of commerce; Charles R. Kidd, ASHAE; Arthur W. G. Jones, Southern California Gas Co.; Jack R. Allen, County of Los Angeles; Jack Meredith, Home Builders Institute; Tom Pinatelli, HBI; Reggie B. Hesling, Institute of Heating & Air Conditioning Industries; E. L. Nelson, National Assn. of Practical Refrigerating Engineers. Standing, left to right: W. A. Smith, Local 108 Sheet Metal Workers; Harold H. Tracy, Building Owners & Managers Assn. of Los Angeles; and Martin Hess, Southern California Sheet Metal Contractors' Assn.



## Los Angeles Heating Code--

(Concluded from preceding page) placement of any portion of a refrigerating system.

Changes now provided include air conditioning systems, and their mechanical components, in the new heating code fee schedule. Here are the new fees that will be charged when the revised heating code is published:

\$2 for issuing each permit.

\$1 for the installation of or relocation of each heating appliance regulated by this code, plus

25 cents for each air inlet and air outlet on any heating, ventilating, or air conditioning system.

\$1 for the installation of each combustion products vent, other than a chimney complying with requirements of the building code, plus

\$1 for the repair of, alteration of, or addition to each heating appliance, or heating, ventilating, or air conditioning system including the installation of controls regulated by this code, plus

\$2 for the installation of each evaporative cooler, plus

\$2 for each ventilation system which is not a portion of any heating or air conditioning system authorized by a permit.

\$2 for the installation of each hood, plus

\$2 for the installation of each compressor of 20-hp. rating or less, plus

\$5 for the installation of each compressor over 20-hp. rating but not over 50-hp. rating, plus

\$10 for the installation of each compressor over 50-hp. rating, plus

\$3 for the alteration or replacement of any mechanical cooling equipment which is a portion of an air conditioning system.

Other revisions:

Equipment shall not be connected to fuel or power supply until the department has issued a final inspection tag of approval.

An exception to this was clarified. When defective heating equipment is replaced, it may be placed in operation and a request for inspection must be filed within 48 hours.

A motion was adopted providing that the code state no water heater shall be used in lieu of a boiler for heating or air conditioning systems, and that such boilers must comply with state laws and city code.

Portable ventilating equipment and portable air conditioning equipment will not require a permit.

The present code provides that besides registered contractors, a permit may be issued to "any owner doing work, in a single family dwelling which is his own residence or intended residence or in any of the usual accessory buildings therefor, or any assistant to such owner if the assistant works in the presence of and under the supervision of the owner."

The revised code will provide:

The owner of a single family dwelling, including the usual accessory buildings, may obtain permits for work in such dwellings or accessory buildings provided:

The owner satisfies the Department by examination that he is qualified to satisfactorily perform or supervise the work under the permit.

The dwelling is, or is to be, occupied by the owner.

The dwelling is a detached building containing no other dwelling unit or other occupancy.

There are no other buildings other than the dwelling and accessory buildings located on the premises.

No owner's permits are issued to the same person for more than two separate premises in any one year, and

The owner files an affidavit with the Department stating all the foregoing facts.

## John Wood Div. Names T. E. Carson

CONSHOHOCKEN, Pa.—T. E. Carson has been appointed manager of heating sales for the Heater & Tank Div., John Wood Co., according to W. Glenn Oslin, vice president and general sales manager.

Carson has been manager of eastern heating sales since May, 1956 when the company acquired the Fluid



T. E. Carson

Heat line from Anchor Post Products, Inc., of Baltimore. He joined Anchor Post Products in 1946 as a member of the Fluid Heat sales department.

John Wood Co. recently introduced a wide range of oil-fired hot water boilers and is presently developing a number of other new Fluid Heat units, Oslin stated. Carson will be responsible for coordinating sales of the Heater & Tank Div.'s expanded line of heating and air conditioning equipment for home and industry use.

## Thatcher Offers Dealers Promotion Pieces

GARWOOD N. J.—As part of its long range "grass roots" dealer support campaign, Thatcher Furnace Co. is offering its dealers a large number of new sales promotion pieces.

Available from the firm are double postcard mailers, door knob hangers, throw aways, and envelope stuffers. Some of the sales aids are keyed for use in the fall, others for the spring, and many for year round use.

Many of these items stress the savings a homeowner can realize if his heating system gets the periodic care it needs from an experienced and skilled heating equipment dealer. Homeowners are urged to con-

tact their dealers immediately for heating system check ups.

Also available are newspaper mats and copies of the Thatcher booklet "Complete Indoor Comfort."

## Dec. 5 Point-of-Purchase Advertising Seminar Set

NEW YORK CITY—An all-day seminar, designed to present important new data and techniques pertaining to the more effective use of point-of-purchase advertising, will be conducted by the Point-of-Purchase Advertising Institute on Thursday, Dec. 5, at the Plaza hotel here.

**WIN A PRIZE!** Send your cartoon suggestions on the subject of "Genetron" Super-Dry Refrigerants to: "Genetron" Dept., General Chemical Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y. WE WILL PAY \$10 for every cartoon idea used and print your name and address.



It says, "Always use genetron® bone-dry refrigerants!"



The standard of the industry—

**PRIMORE**  
Automotive  
Air Conditioning  
**VALVES**

Primore's engineers have developed a full line of Compressor Pad Valves and Fittings for Automotive Air Conditioning units. In addition there are Primore designed valves for such components as Condensers, Receivers, Evaporators, etc.

THEY'RE BEST BECAUSE—

- Designed especially for Automotive use
- Precision manufactured
- Cost Cutting Hydrogen brazed steel construction



FREE—

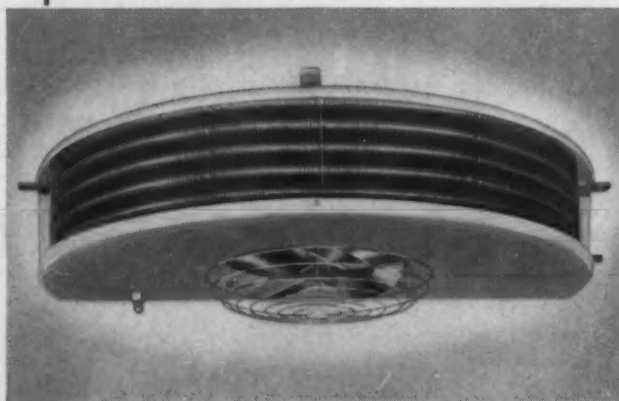
Primore Refrigeration Valve Catalog, giving full details and description. Fully illustrated.

**Primore Sales, Inc.**

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Adrian, Michigan

REFRIGERATION  
SALES • DESIGNING • ENGINEERING

## new from KRACK... semi-circular unit cooler



Exclusive circuiting system prevents coil "frost-up"

- Electrostatic air filter on air intake.
- Mounts against wall for more usable storage room.
- Semi-circular discharge gives more even air circulation.
- Has full size built-in heat exchanger.
- Easier to install—suction and liquid line can be taken from either side of the unit.
- Drain pan is hinged for easy access to motor and expansion valve.



New BULLETIN SC-957 gives complete data . . . write or 'phone today!

**REFRIGERATION**  
APPLIANCES, INC.

Only Krack's 25 years of engineering and production experience makes such cooling values possible.

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MOntrope 6-1141



# What Was New

## At the ARI Show

On this page, and page 14 of this issue, the NEWS presents pictures of new products shown at the 10th Air Conditioning & Refrigeration Industry Exposition in Chicago. Other picture coverage of the show will appear in future issues of the NEWS. For further information on new products, please use Key Numbers and refer to the "Information Center" blank on page 12. (All photographs on this page were taken by Irving Alter of the Harry Alter Co.)



KEY NO. G-12133

NEW, ROUND prefabricated lightweight duct sections were displayed by Owens-Corning Fiberglas Corp. Joanne Boyne demonstrates ease with which duct can be handled.



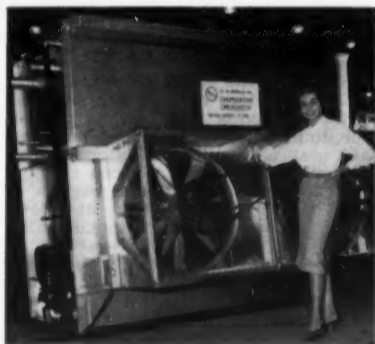
KEY NO. G-12137

FULL OR SEMI-HERMETIC compressors are the buyer's choice in the new, slim Curtis Mfg. Co. "CPU" model packaged commercial air conditioners, available in 38,040 and 63,400, and 95,100 B.t.u. capacity under standard rating conditions. Plenum-Grille assembly and heating coils are optional. Jackie Walker poses with one of the models to illustrate tall, slim look.



KEY NO. G-12134

COMPLETE 3-TON packaged air conditioner in novel design is this new Southwest Mfg. Co. model which measures 58 in. long and 32 in. wide, and weighs 467 lbs. It comes complete with expansion valve, liquid indicator, dual condensate pan, and individual controls. Glenn Morr of Southwest (left) looks it over with Lou Snell, Snell Refrigeration Supply, Dallas.



KEY NO. G-12138

CAPACITY RANGE OF 75 to 300 tons in evaporative condensers, and up to 400 tons in cooling tower models, are available in models of this design in new line introduced by Baltimore Aircoil Co., Inc., Pat Lee poses to give idea of size of blower wheel.



KEY NO. G-12135

AIR-COOLED LIQUID CHILLER in capacities from 3 through 15 tons was new item shown by American Coils Co. C. M. Hatcher of the company explains details of the unit to Mr. and Mrs. Mario Lopez of Chicago.



KEY NO. G-12136

ELECTRIC HEATING BLANKET for defrosting coils in unit coolers, display cases, and similar refrigerating equipment, is this "US-Kon" conductive rubber heating unit developed by U. S. Rubber Co. Pat Lee holds blanket which is used with unit cooler.

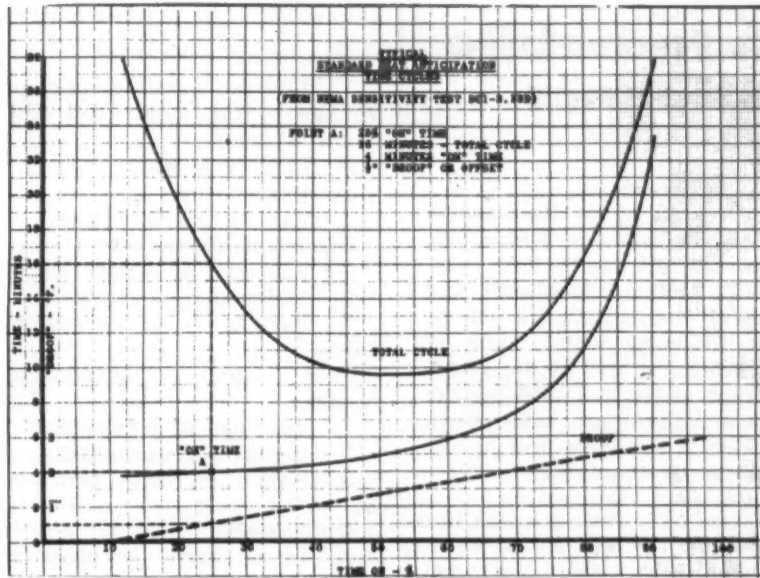


FIG. 8—"Droop" will vary directly with the operating time of the heating system.

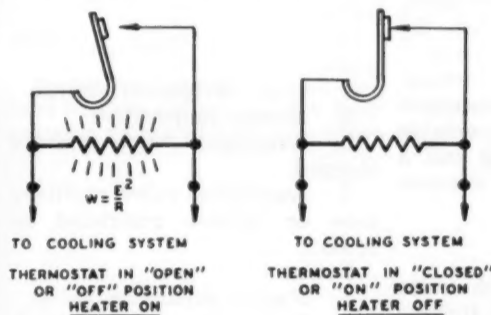


FIG. 9—Schematic diagram of cold anticipation in a cooling thermostat.

## Design and Operation of Low Voltage Thermostats

### 3. Design Features and Built-In Control Devices

By Douglas S. Sterner, Sales Manager, Air Conditioning & Refrigeration Controls Div., General Controls Co.

#### DROOP

This brings us to another unusual characteristic of thermostats which, under certain conditions, causes problems. This characteristic is known as "droop" and is defined as a shift in the operating control point which causes the thermostat to control at a temperature different from that set by the temperature adjusting (or setting) device.

This deviation in controlled room temperature—also known as "thermal offset"—is due primarily to the heating effect on the bimetal caused by the heat anticipator, but is also affected by the heat generated by the current flow through the contacts and the heat storage of the thermostat itself and the wall area to which the thermostat is connected.

When the thermostat is on for a large percentage of the time, the thermostat—if not compensated for in some way—will tend to shift the control point down the scale due to this added heat within the thermostat itself. Thus "droop" will vary directly with operating time of the heating system, as is shown by Fig. 8.

It is possible to minimize the effect of "droop" by correct sizing of the heat anticipator. Thermal offset is limited to 4° F. maximum by Nema standards for room thermostats. It should be pointed out that anticipator selection is based on a specific primary heating control system and a specific "On" or operating time of the heating system. Changing either or both of these will require a change of the heat anticipator.

It is seldom necessary to consider the current value of the

specific heating control system once the correct heat anticipator is selected. However, the "On" times frequently vary considerably, and this does introduce "droop" into the thermostat. Fortunately, such periods of long "On" times are generally of short duration and occur at night when temperature control is not nearly as critical as it is in the daytime.

#### COLD ANTICIPATION

Cold anticipation does the same thing for a cooling thermostat that heat anticipation does for a heating thermostat. There is this difference, however:

Where the heat anticipator is heating only when the heating system is operated and is designed to cause the bimetal to break its contacts before the room air temperature has risen sufficiently to cause it to do this (thus anticipating the fact that the heat being supplied to the room will be sufficient to bring it up to the desired temperature), the cold anticipator is energized only when the cooling system is non-operative, and it is designed to cause the bimetal to make its contacts before the room air temperature has risen sufficiently high to cause it to do so—thus anticipating a rise in room air temperature.

Fig. 9 is a schematic diagram of cold anticipation in a cooling thermostat. When the thermostat is in the "Off" position, the cooling circuit is open, the compressor (or other cooling media) is off and the room air temperature is being heated by the various heat gain loads to which the cooled space is subjected.

The cold anticipator is in parallel with the thermostat contacts. The anticipator has a

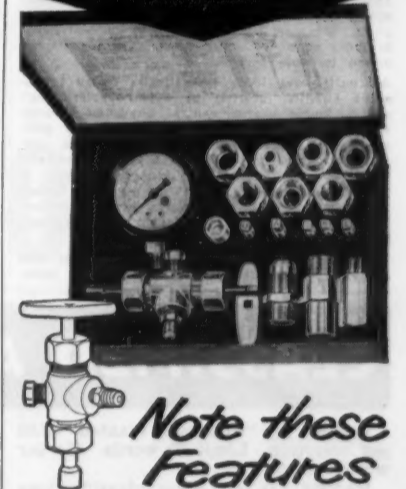
very high resistance—in the order of 4,000 to 10,000 ohms—and thus, on a low voltage system the actual current flow through the anticipator would be very small (less than 10 milliamperes). This small current flow is not sufficient to energize relays, solenoid valves, or contactors normally found in cooling system circuits.

Wattage output of this type of heater is independent of current draw in the primary circuit, but rather depends on the "open circuit voltage" of the primary circuit.

When the bimetal has reached the control point, the contacts close, completing the electrical control circuit and starting up the cooling system. At the same time the cold anticipator is shunted out of the thermostat circuit by what might be considered a "dead short" caused by the parallel circuit through the thermostat contacts.

(To Be Continued)

**NOW...**  
SERVICE ALL TYPES OF HERMETIC UNITS  
*with One Valve!*  
**THE NEW KEROTEST HERMETIC SERVICE KIT**



*Note these Features*

- ★ Eliminates the need for a separate valve for each hermetic unit serviced. Master valve is furnished with adaptors and stem extensions to service specific units.
- ★ Stainless steel stem provides long service life—at no added cost.
- ★ Available with or without compound gauge in large heavy gauge steel box.
- ★ Many other time and cost saving features.

See your Kerotest wholesaler today.  
Ask for No. 4321 or 4321G (with gauge).

**KEROTEST**  
KEROTEST MANUFACTURING CO.  
2502 Liberty Avenue  
Pittsburgh 22, Pa.



## Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Vornado unit is the tenth make to be discussed in the current series on automobile air conditioners. Makes previously described in this series were A.R.A., Artic-Kar, Frigette, Frigikar, Kauffman, Mark IV, Airtemp, Mobilette, and Novi. Other makes by "independent" manufacturers will be described in future instalments, following which units of most automobile manufacturers themselves will be described.

Models discussed in the current series are 1956 and/or 1957. For data on earlier models readers are referred to the original series of articles, which is available now in the handy manual, *Servicing Automobile Air Conditioners*.

automobile air conditioners.

*Insufficient air velocity.*

1. Low fan speed due to poor voltage to fan motor and bad motor bearings.

2. Dirty evaporator.

*Scraping noise.*

1. Fan hitting mounting.

*Hissing noise at coil.*

1. Shortage of refrigerant.

2. Restriction in liquid line.

3. Restriction in expansion valve.

*Poor cooling or evaporator frosting.*

1. Shortage of refrigerant.

2. Liquid line restricted.

3. Expansion valve restricted.

*No cooling.*

1. Liquid line or receiver clogged.

2. Thermostat faulty (clutch units).

3. Clutch faulty (clutch units).

4. Lost refrigerant charge.

5. Blower inoperative.

6. Expansion valve strainer clogged.

7. Expansion valve capillary tube or bellows restricted or broken.

*Too cool.*

1. Faulty expansion valve.

2. Faulty thermostat (clutch models).

3. Clutch won't release (clutch models).

*High head pressure.*

1. Air in system.

2. Over-charge of refrigerant.

3. Condenser clogged.

4. Engine overheating.

*Low head pressure.*

1. Shortage of refrigerant.

2. Faulty compressor.

*High suction pressure.*

1. Faulty compressor.

2. Clutch slipping (clutch models).

3. Expansion valve bulb loose or improperly located.

*Low suction pressure.*

1. Liquid line restricted.

2. Evaporator dirty or clogged with ice.

3. Shortage of refrigerant.

### Engine Overheating

Overheating of car engines, especially on older cars, sometimes results after the installation of an air conditioner, regardless of make. To remedy this condition, the manufacturer of Vornado units offers the following suggestions, listed in order of their importance:

1. Clean and back-flush entire engine cooling system.

2. Adjust ignition timing, setting it slightly faster.

3. Replace non-permanent anti-freeze with water.

4. If cooling system thermostat is not operating properly, replace it with one that operates at lower temperature, or omit entirely (on certain cars—check with local automobile agency).

5. Make certain there are no restrictions in water hose lines.

6. Replace radiator fan with one having more blades.

7. On some cars smaller diameter water pump pulleys can be installed to increase coolant flow.

8. On some cars a high pressure (14 p.s.i.g.) radiator cap can be used.

9. Use "Ethyl" gasoline with carburetor set for rich mixture.

10. Install a fan shroud from radiator around fan.

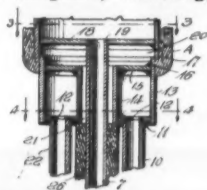
11. For extreme cases one or two small auxiliary electric fans can be installed in front of condenser and radiator.

## PATENTS

Week of Sept. 24

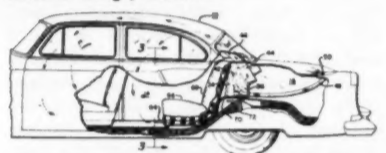
(Continued)

2,807,152. DEFROSTER FOR AN END OF AN ICE FORMING TUBE. Merlin S. Chapman, Wheeling, W. Va.



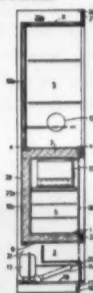
1. A defroster for an end portion of a cylinder for forming ice on the exterior periphery thereof comprising a pair of concentric spaced apart annular plates forming the side walls of the defroster casing, a ring shaped plate connecting and closing an end portion of said annular plates forming the top of said casing, a second and similar ring shaped plate connecting and closing the opposite end portion of said annular plates forming the bottom thereof, said second ring shaped plate having a pair of spaced apart openings therethrough, a pair of pipes connected to said second ring shaped plate each in communication with one of said openings for the passage of a heating medium to and from said casing and the outer of said annular plates having a portion extending from said first mentioned ring shaped plate for connection to the end of said ice forming cylinder positioning the top of said casing from and below said cylinder providing an insulating air space therebetween.

2,807,153. VEHICLE REFRIGERATING APPARATUS. Webster J. Owen, Birmingham, Mich., assignor to General Motors Corp., Detroit.



In combination with an automobile having a passenger compartment and a luggage compartment separated from one another by means of a wall, a refrigerating system including an evaporator disposed within said luggage compartment, a housing for said evaporator having a return air inlet adjacent the upper end thereof above said evaporator, said passenger compartment having seat means therein including bottom and back portions, said seat means having interstices in the bottom and back portions through which air from the bottom portion of said passenger compartment flows rearwardly and upwardly to said inlet, said back portion of said seat having an air opening arranged in alignment with said return air inlet.

2,807,154. ARRANGEMENT FOR REFRIGERATORS. Karl Hilding, Broseus, Saltsjo-Bo, and Johan Bergseth, Johanneshov, Sweden, assignors to Hyregasternas Sparkasseoch Byggnadsforenigars Riksforbund u. p. a., Stockholm, Sweden.



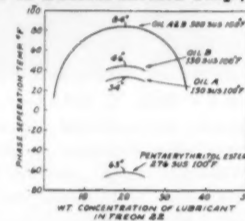
1. A food cupboard comprising in combination a bottom unit, containing a compressor and a condenser of a cooling apparatus, a refrigerating chamber above said bottom unit and containing an evaporator for said cooling apparatus, a food storage chamber disposed directly above said refrigerating chamber, the height of the whole cupboard substantially corresponding to the total of the heights of said

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

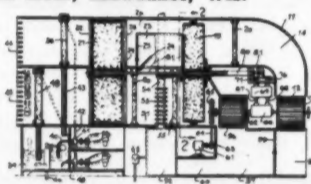
bottom unit, refrigerating chamber and food storage chamber, an air inlet at the bottom of said bottom unit below said condenser, an air duct connecting the space above said condenser with an air outlet at the upper end of said cupboard for conducting air from said air inlet through said condenser to said air outlet, said air duct extending substantially from bottom to top of said cupboard at the rear side thereof.

2,807,155. WORKING FLUIDS IN REFRIGERATION APPARATUS. Victor A. Williams, Dayton, Ohio, assignor to General Motors Corp., Detroit.



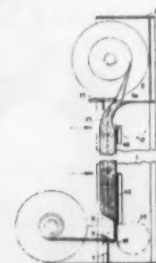
1. In combination, a refrigeration apparatus including a compressor, condenser, and evaporator in refrigerant flow relationship, a difluoromonochloromethane refrigerant and a lubricant soluble in said refrigerant comprising an organic ester of pentaerythritol which is a reaction product of mono-pentaerythritol and an organic acid selected from the group wherein the carboxyl group is attached to a radical taken from a group consisting of alkyl and aryl radicals having an average of from 6 to 10 carbon atoms.

2,807,258. AIR CONDITIONER, INCLUDING FURNACE. Neal A. Pennington, Tucson, Ariz., assignor of one-fifth to Robert H. Henley, Tiptonville, Tenn., and one-fourth to Roger Sherman Hoar, Milwaukee, Wis.



1. An air conditioner, including: means forming an outgoing-air passage, for conveying exhaust air away from the enclosure which is being serviced; means forming an incoming-air passage for conveying conditioned air to the enclosure which is being serviced; means for impelling air through the two passages in countercurrent relationship; a rotary moisture-transferer, mounted for rotating across both passages; means for rotating the moisture-transferer; and means, including a furnace, for heating the exhaust air in the outgoing-air passage prior to said air reaching the moisture-transferer; said air conditioner being characterized by having conduit means for routing at least a portion of said exhaust air to the combustion-chamber of the furnace to serve as a forced draft therefor.

2,807,330. METHOD AND APPARATUS FOR FILTERING AIR. Richard D. Rivers, Louisville, Ky., assignor to American Air Filter Co., Inc., Louisville, Ky.



1. A supply of filter medium for air filtering operations consisting of a pre-formed package comprising a mandrel member having convolutely wound thereon a relatively elongate permeable expandable-compressible web which will return to an expanded state when released from a compressed state, the layers of which are compressed to a depth which is less than one-half the depth of the web in its uncompressed condition.

(To Be Continued)

## VORNADO (3)

The O. A. Sutton Corp., Inc.  
1812 W. Second St.  
Wichita 1, Kansas

### SERVICE HINTS

#### Evacuating System

Use of a vacuum pump to evacuate Vornado units is recommended by Sutton.

A system should be pulled down to at least 28 in. of vacuum and held at that point by the vacuum pump for 15 minutes. If there is a sharp rise in suction pressure after the vacuum pump is turned off (or

valved off), there is a leak in the system. Some Refrigerant-12 should then be allowed to enter the system to permit checking for leaks with a halide torch. Following repair of leaks, the system should be re-evacuated.

Factory-recommended evacuating and charging procedure involves the use of a portable Airserco charging board and a Kinney or Worthington vacuum pump.

#### Charging System

Charge in 1957 Vornado units is 45 oz. (by weight) of Refrigerant-12. There is also 15 cc. of alcohol in systems having the Tecumseh HH compressor.

The systems are charged through the low side in the conventional manner while the car engine is operated at approximately 30 m.p.h. speed. It may also be advisable to place a large fan in front of the car while charging the system.

Vornado systems may be charged either through the Airserco charging board, which permits the amount of refrigerant to be measured in a graduated column, or from a "charge-a-can" manifold holding three 15-oz. cans of Refrigerant-12.

#### Trouble Chart

The following list of symptoms (in *italics*) and probable causes is offered as a guide to diagnosing service complaints when working on 1957 Vornado

## DRASTIC Price REDUCTION commercial package AIR CONDITIONERS WATER COOLED 2-3-5 H.P.

These are brand new, factory stock, nationally advertised, famous brand water-cooled package units. We must move them out of our warehouse to make room for other stock. These units are priced to move fast.

All units have 100% hermetically sealed refrigerant circuits (covered by 5-year factory warranty), humid weather control, handsome natural-tone jacket, 4-way adjustable discharge grill, plenum chamber, water regulating valve, adjustable thermostat, return air grill. Available in either 208/220 volt—3 phase—60 cycle, or 230 volt—1 phase—60 cycle. All units are factory assembled, wired and ready for installation. Exceptionally compact size makes this equipment ideal wherever space is at a premium.

Write for complete details and prices to Box A 5920, Air Conditioning & Refrigeration News.

## CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications \$10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

### POSITIONS WANTED

REFRIGERATION AND electrical technician desires position with large hotel, hospital or other institution. Have had ten years' experience on all types of commercial refrigeration equipment, including operating and maintaining artificial skating arena, and electrical technician in the electrical engineering department of a college. Am worthy of top salary. BOX A5917, Air Conditioning & Refrigeration News.

LEAVING SERVICE, desire sales engineering position with company handling complete line air conditioning equipment. Four years' experience application of residential and commercial air conditioning equipment, age 26, married, M.E. degree, available January 1958, prefer Midwest or East, resume and references on request. Send details, BOX A5918, Air Conditioning & Refrigeration News.

SENIOR PROJECT or Chief Engineer—Fifteen years' experience in handling engineering and manufacturing problems. Five years of which have been design and product engineering of air conditioning and refrigeration systems, including heat pumps. Desire position with opportunity for development from engineering into broader executive re-

sponsibilities. BOX A5919, Air Conditioning & Refrigeration News.

### POSITIONS AVAILABLE

AIR CONDITIONING sales engineer, capable of bidding mechanical sections of plan and spec jobs, design of packaged and central station year round systems, develop business with contractors, architects and investors. Write to JAMES THOMPSON, 5001 E. 59th Street, Kansas City, Mo. for interview. State age, earnings expected and type of previous experience.

SALES ENGINEER: Excellent opportunity in expanding OEM sales department of well known manufacturer of control valves and devices. Engineering education desirable. Development or application experience in refrigeration, air conditioning, or heating essential. In reply state education, experience, earnings, personal data. Interviews arranged with qualified applicants. Replies held in confidence. BOX A5916, Air Conditioning & Refrigeration News.

### EQUIPMENT WANTED

WANTED: USED ice machines, preferably Scotsman flaker & cubers. In reply state model, year, serial, condition and asking price. Can use one or fifty. WATERS EQUIPMENT COMPANY INC., phone RE 7-5377, 4602 North Dale Mabry, Tampa, Florida.

### MISCELLANEOUS

ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR, 2833 Lincoln Avenue, Chicago 13, Illinois.



## Refrigeration Problems

### And Their Solution

(As Written by Paul Reed)

The late Paul Reed, one of the refrigeration industry's most respected writers and teachers, wrote a column on "Refrigeration Problems and Their Solution" which was published regularly in AIR CONDITIONING & REFRIGERATION NEWS for more than 15 years.

Readers throughout the years have hailed this written material as some of the most practical and helpful that has ever been published. Fortunately, the author had an opportunity to revise some of this material and the NEWS is currently re-publishing it.

## Locating Liquid Line Sight Glass

A reader writes: "Where is the best place to put the liquid line sight-glass? Some say that it should be put just ahead of the expansion valve and others say that it is dangerous to do this. Is this true?"

Here's the answer: There are many points about placing of driers, sight-glasses, and heat exchangers that are quite controversial, and each of the various methods has its proponents and opponents, so about all that we can do is to try to review the virtues and objections to various methods and let the reader judge for himself.

### REASON FOR USING A SIGHT-GLASS

First let us examine why a liquid line sight-glass is used at all. Certainly the answer to this is that we want to see if the expansion valve is getting a solid column of liquid. Bubbles in the sight-glass indicate that, for some one of several causes, the liquid going through the sight-glass is not a solid liquid. As pointed out in a previous article, bubbles in the sight-glass indicate that:

(1) There has been a drop in pressure of the liquid line ahead of the sight-glass, sufficient to allow some of the liquid to "boil" and thus form vapor which shows up in the sight-glass as bubbles, or;

2. The liquid line has become heated above the temperature of the receiver, and this also allows the liquid to vaporize and form gas bubbles, or;

(3) There is a shortage of refrigerant in the system, that breaks the liquid seal at the point where the liquid line leaves the receiver; or if there is no receiver, the condenser. This allows some of the hot gas in the receiver to get into the liquid line along with the liquid, or;

(4) There is air or some other "non-condensable" gas in the system, that is passing through the liquid line with the liquid and shows up as these bubbles. It is not probable, however, that this is a very frequent cause of bubbles in the liquid line sight-glass, for air tends to stay in the receiver or condenser and probably does not find its way into the liquid line to any great extent except in conditions of low refrigerant charge when the liquid seal is broken.

Whatever is the cause of the bubbles, we are chiefly interested in the "quality" of the liquid going to the expansion valve. If it is not a solid column of liquid, the valve may not be able to pass enough refrigerant to the evaporator to make the evaporator fully active and we may have a partially frosted evaporator.

Generally, this is more likely to be due to a shortage of refrigerant than to pressure drop, heating of the liquid, or air, although these other things can, and often do result in partially starved evaporators, especially if the expansion valve is not quite or barely big enough for that particular evaporator and temperature.

So for the liquid line sight-glass to give us the answer to the quality or condition of the liquid just as it goes to the expansion valve,

the sight-glass should be placed just ahead of the valve.

### THIS LOCATION CAN BE DANGEROUS

Ordinarily we use a sight-glass to tell whether or not there is a full charge of refrigerant, rather than to trace restrictions. So if we put on a sight-glass in a liquid line between the drier and the expansion valve and it shows

bubbles, what is about the first thing a serviceman does? He starts adding refrigerant.

But suppose that the system really had a full charge of refrigerant, and the bubbles in the sight-glass are actually due to a partially stopped drier or some other restriction in the liquid line ahead of the sight-glass?

He may add refrigerant in an effort to get a solid column of liquid (until the bubbles disappear) to the point that he may heavily overcharge the system and cause extremely high pressures in the condenser, receiver, and liquid line, including the stopped drier.

This is a frequent cause of burst driers, that not only results in loss of the charge and destruction of the drier, but often results in damage to the compressor or even to the motor. Nor is it a safe thing for the serviceman. He may be hurt from the bursting drier or from getting a lot of liquid refrigerant in his eyes.

### USE THE GAUGES

During this operation he should have had the gauges on. The high pressure gauge will tell him when

the pressures start to get too high. Moreover, it will indicate that he already has a full charge. So he should *always* have the high pressure gauge on when adding refrigerant.

In fact, he should also have the compound gauge on, just as a matter of good practice, for it will tell him many things about the operation of the equipment if he but properly interprets what it says. There are not many service calls that can be made satisfactorily without putting on gauges.

But to get back to the location of the sight-glass. If you are one of those careful, thorough men, who doesn't rush a job through and who always puts on the gauges and pays attention to them, you can put the sight-glass after the drier.

But if you are not careful and if you add refrigerant without gauges, and are in a hurry to get away from the job to the extent that you take chances both with safety and with the quality of your work, then you had better put the sight-glass ahead of the drier.

In fact, it is pretty good general practice to put the sight-glass

near the receiver outlet, for it will tell you if there is a full charge. Then you can start hunting down restrictions, etc., after you have established that there is a full charge of refrigerant.

Some makes and models of condensing units have sight-glasses, bullseyes, test cocks, or other means of determining the liquid level in the receiver.

It would be a fine thing for the serviceman if every unit were so equipped. It would not only make it easier for the serviceman, but it would save a lot of time for him and for his customer, and result in quicker and more efficient diagnosis of the trouble.

The time saved on one service call will pay for the original cost of providing a simple test cock to check if there is the minimum amount of liquid in the receiver.

### Reprints Available

Hermetic Compressor Design, Development, by Henri Soumerai. Only 40¢ each. Mail this ad with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.



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## ARW Gets Down to 'Brass Tacks' --

(Concluded from Page 1, Col. 2)

Phoenix, is secretary; and E. Peter Sorensen, Aero Supply Co., Chicago, is treasurer.

New directors elected included Koopman; Ed S. Diggle, Henry V. Dick & Co., Inc., Columbia, S. C.; and Alex Trevino, United Supply Co., San Antonio, Texas.

The 1958 convention will be held Oct. 22-24 in San Francisco.

### Likes Handling One Line Only

Taking an affirmative stand on the subject of handling lines of air conditioning and refrigeration supplies on an exclusive basis, Peter H. Askew of Thermal Products, Inc., Los Angeles, based his argument on the idea that it has become impossible for the wholesaler to "handle everything," and that he can better serve his customers by handling one or two brands.

If a wholesaler attempts to handle all of the brands of a certain type of product, said Askew, the wholesaler will of necessity become only an order taker, because he can hardly be expected to learn enough about the particular features of each brand to do an adequate job of selling any one brand.

Furthermore, the wholesaler's men can't serve their customers adequately because they can't advise their customer on applying the product properly to an installation or repair job.

### 'Become Experts By Specializing'

By "specializing" on certain lines of equipment and limiting the number of brands handled, Askew says that he and his men have become "recognized as experts" in these lines, thus gaining the confidence of the contractors and servicemen, and insuring that their purchases will be made at his stores.

A further argument in limiting the number of lines and brands handled, said Askew, is that it results in tying up less capital in inventory and eases problems in inventory control.

Askew pointed out that there are good arguments for what he termed "the general store" type of operation, in which the wholesaler attempts to handle everything that his customer might want to buy, and carries several brands of one type of item.

### Advantage of 'One Stop' Place of Supplies

The obvious advantage of this method of operation, as it was pointed out in the floor discussion, is that the wholesaler has a better chance of becoming a "one stop" place for the supplies needed by any one customer.

The question was also raised as to what happens to the "exclusive" type wholesaler when job specifications call for a particular make of equipment and there is no "or equal" clause included in the specifications.

Askew said that this rarely happens, because the contractor will control most of the specifying of the exact make of equipment on a job, but where it should happen, efforts are made to get a change in specifications.

Pointing out that there has been some pressure on wholesalers to lengthen payment terms because of the tight money situation, Paul Cato,

Texas Refrigeration Supply Co., Ft. Worth, declared that the situation bears close watching or it could get out of hand.

"Let's not get into the situation where the manufacturers who supply us will be concerned not only as to whether we can sell their goods, but also whether or not we can collect for them," Cato said.

### 'Longer Terms Are Unfair Tactic'

In some instances longer terms are apparently being used as a competitive weapon for sales by both wholesalers and the installation contractors to whom they sell, Cato said. This is obviously an unfair tactic and one which wholesalers should try to discourage, Cato said.

He urged the wholesalers to make closer checks on credit references, and said that in

addition to trading credit information, wholesalers should refuse to sell accounts who are delinquent with other wholesalers.

Leading the discussion on cost-cutting, N. K. Mason, Mason Supply Co., Columbus, Ohio, declared that there are two main areas of what he termed unnecessary costs. One of these is inefficient help in the wholesaler's own establishment, particularly in checking in merchandise, handling, and shipping.

### Other Results

The other results from certain policies of the manufacturers, primarily (1) errors in shipping and billing by the manufacturer, in which the wholesaler incurs considerable cost, which he can't recover; (2) handling of in-service warranty exchanges; (3) freight charges which must be paid by the wholesaler.

The wholesaler must do everything possible to make certain that those in his organization in charge of check-in merchandise be as efficient as possible, said Mason, because errors in shipping, billing, and handling are costly, particularly when restocking charges are involved. When mistakes of this type are made by the manufacturer, the wholesaler should be recompensed in some manner, Mason declared.

### Seek Reimbursement

Where the wholesaler is involved in handling defective in-warranty merchandise, he often incurs expense which he can't pass on, and Mason stated that wholesalers are seeking some sort of reimbursement from the manufacturers in such instances. Where the replacement of an in-warranty product is made "over the counter," a credit is preferred to repaired merchandise, Mason said.

Freight charges are increasing, said the speaker, and the wholesalers would like merchandise shipped to them either on a pre-paid or freight allowance basis.

The discussion of "realistic list pricing" of the items which the wholesaler sells was in the form of a discussion from the floor, with members of the panel, headed by J. P. Glass of Chase Supply Co., Inc. in Chicago, acting as moderator of the group.

### Two Sides to the Discussion

There were two general sides taken in the discussion, one that there should be list prices on the items sold by the wholesaler to the contractor, which the contractor could quote to the ultimate purchaser; the second stand being that the wholesaler sells to his customer on a net cost basis and shouldn't be particularly concerned with the list price.

## RX MIXED-FLOW BLOWER UNIT: A TORRINGTON 1st

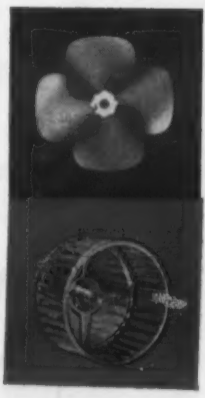
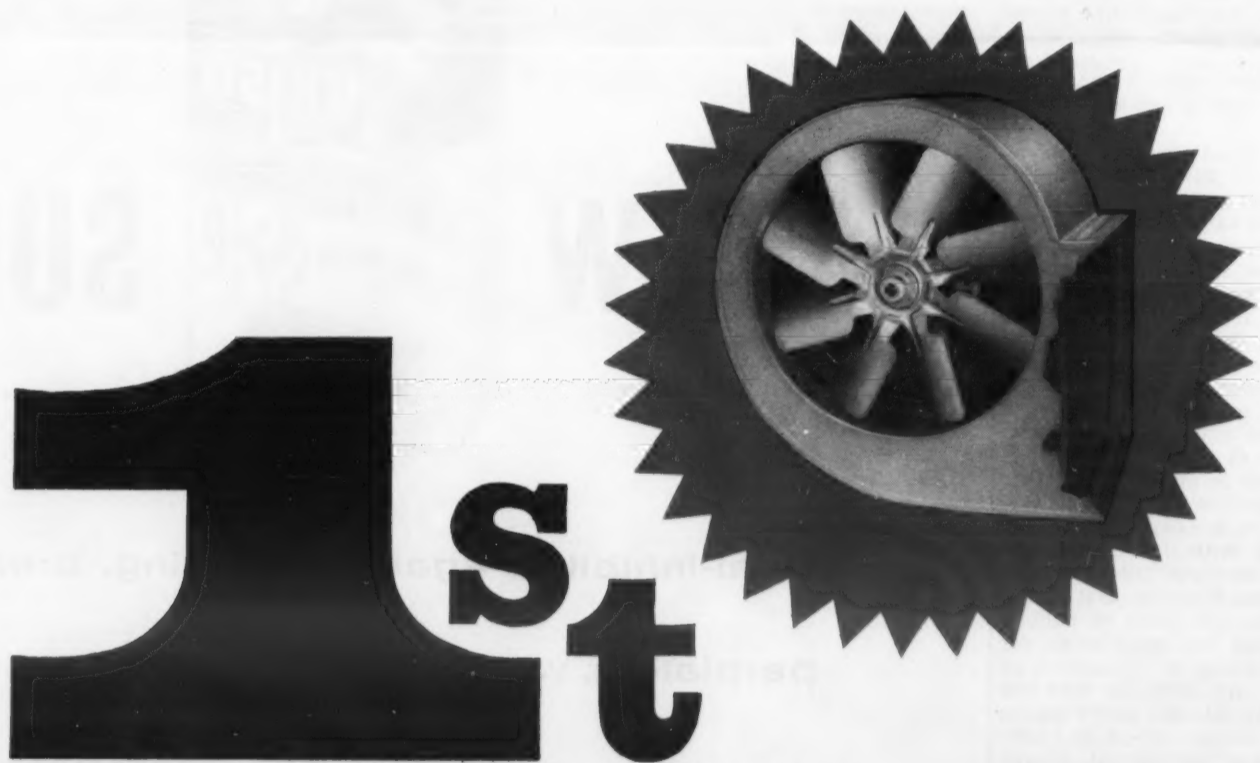
The Torrington RX Radiax blower introduces a new development in air impeller engineering.

*It is a direct drive mixed-flow unit employing an exclusive Torrington design concept which results in the conversion of axially-developed air pressure into a radial flow pattern.*

The result of this design breakthrough is a versatile unit that can be tailored to an extended range of customer needs by modification of the axial fan configuration to exact performance specifications. This eliminates dependence upon a variety of different sized units for varying requirements.

The RX offers three important advantages:

**PERFORMANCE**—A flat power curve makes it a non-overloading unit, permitting the use of a single smaller-capacity motor for varying appli-



cations, and availability of the unit in sizes heretofore too large for direct drive applications.

**CONSTRUCTION**—A vertical center panel divides the unit longitudinally and supports the motor at its center of gravity. Resilient motor and fan mountings minimize noise and vibration. Result is quiet performance, and easy assembly and service.

**ECONOMY**—The basic design permits size reductions of as much as 36 per cent in the cubic dimensions of the unit, without sacrifice of performance. Thus, the RX is a thinner, more compact unit that can be fitted into tighter areas without choking of air intakes.

The design and performance of the RX give it a versatility that is of special importance to design engineers of air moving equipment. Full specifications are available.

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